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NOT only did the figures themselves in the Wabash annual report plainly indicate that the company was imperatively in need of additional capital to make improvements, but President Delano emphasized this fact by calling attention to the present unfavorable position of the Wabash as compared with its competitors. A change, therefore, was pretty plainly forecast. On Tuesday last, at the request of the Equitable Trust Company, New York, trustees of the first refunding and extension mortgage bonds of the Wabash, Robert Goelet, Edwin Hawley, Alvin W. Krech and Winslow S. Pierce were elected directors, succeeding W. H. Blodgett, E. B. Pryor, J. Gould and E. T. Welles. E. T. Jeffreys has been succeeded as chairman of the board of directors by Winslow S. Pierce, and an executive committee has been appointed consisting of the new directors and General Hubbard, already a director. It is announced that Kuhn, Loeb & Company, New York, will act as bankers for the road. No announcement has been made as to what form a reorganization of the company's finances would take. Reversing the procedure in the Missouri Pacific case, the election of directors took place first and the announcement of Kuhn, Loeb & Company's connection with future financing was made subsequently.

THE views of Mr. Foster, the Canadian minister of trade and commerce, as expressed at the recent dinner of the Canadian Club in New York City, are unique, not to say reactionary, in their bearings on the railway economics of Canada. Nova Scotia, to be sure, wants to sell her apples in the United States. But Mr. Foster wants them sent to the northwest provinces, which, he thinks, in turn ought not to trade with Oregon, but send their products to eastern Canada. Transcontinental markets thousands of miles away are thus to be substituted for markets nearby, with corresponding burdens on both producer and consumer. The proposition is interesting as going the ordinary theory of protection one better. That theory primarily is intended for the benefit of the producer, with secondary results of national development, including diversity of industries. But here is a theory that not only puts "nationality" first, but ties it up to the idea of the long haul and protective patronage of the railways. But Mr. Foster goes even further. Internal railway traffic is, in his view, the main thing, the traffic to and from the railways of the United States a thing to be discouraged and its common benefits to producer, consumer and carrier to be ignored. How such *dicta* will square with the desire of a good many of the Canadian border communities for trans-boundary trade is an interesting speculation of the future. Included with that speculation is the query how the theory squares with the invasion of New England by the Grand Trunk and the substitution of New England railway port terminals for those of the Canadian Maritime Provinces—the Grand Trunk, by the way, with the Grand Trunk Pacific, being now a highly subsidized system. But Mr. Foster's exposition throws a fresh light on two points: the shapings of the policy of a national government once it has become a heavy and direct investor in railways, and the force of the campaign cry, "Canada for the Canadians," which last September defeated reciprocity.

THE confession of the McNamaras that they dynamited the *Los Angeles Times* building is of interest to all labor union members and to all who have unions to deal with. Violence marks most strikes. This is true of strikes on railways as well as elsewhere, despite the fact that the members of railway brotherhoods are the finest classes of workingmen in the United States. It often has been charged, and has been as often denied, that the leaders of the unions either incited this violence, or countenanced it, although they might be, in public, repudiating and condemning it. Here is one case where a high officer of a large labor union—confronted by inevitable conviction of murder—confesses that he not only incited, but personally participated in, crimes of the most heinous kind. This will not tend to destroy the belief entertained by many persons that the leaders of many other labor organizations, while not perhaps actively participating, have had knowledge, both before and after their happening, of many lawless attacks on the property of employers against whom they were striking and the persons of those employed to fill the places of the strikers. Before the McNamaras confessed, labor leaders all over the country expressed the greatest confidence in their innocence, although they knew nothing of the evidence against them, and denounced their prosecution as a "capitalistic conspiracy against union labor." Since the McNamaras confessed, these same labor leaders have been vehemently denouncing them and demanding that they be hung. Cynical persons might say that, in view of all the circumstances, these denunciations seem to have been called forth rather by the making of the confessions, which may injure the cause of union labor, than the committing of the crime which cost so many lives.

The whole incident ought to be a lesson to all persons connected with labor organizations. As already indicated, it does demonstrate that strike violence has at times been directly chargeable to labor leaders, and that the unions need to be more careful about the kind of officers they choose. It also shows that sometimes, at least, the truth about such crimes will come out, and that then the harm done to unionism will be very great. Fortunately, most of the railway labor brotherhoods are led by men of ability and character, and are honestly opposed to lawlessness. But there has very recently been lawlessness in connection with strikes on railways; for example, in connection with the shopmen's strike on the Illinois Central. If the law-abiding members of labor unions act according to their best interests they will discountenance such conduct by their fellows and insist on their brotherhood officers doing so.

THE correspondent, "Operation," makes a most pertinent suggestion in commenting on Mr. Fritch's views, on another page, when he directs attention to the necessity of carefully designing locomotives to suit the special conditions for which they are to be used, in order that they may be operated with the greatest economy and efficiency. There have been instances, and comparatively recent ones, where certain types of locomotives have been ordered by some roads more because the particular type happened to be popular when the order was placed than because it was especially suited for the service in which it was to be used. The results in some cases, at least, may well be imagined. On the other hand there have been numerous notable examples recently of locomotives which have been carefully constructed to be used for certain specific conditions, and have given excellent results. As an example, we have the Mallet locomotives, which were responsible for increasing the operating capacity of the Pennsylvania division of the New York Central 40 per cent., as noted in the *Railway Age Gazette* of November 24, 1911, page 1054. The Mallet locomotive which was first tried out on this division had been designed for use on another part of the system where it had given satisfactory results, but the preliminary tests soon showed that it would have to be considerably modified for effective use on the Pennsylvania division. It was returned to the builders and a number of changes were made. The modified design was found to give such effective service that the consolidation locomotives which had been used formerly were entirely replaced by the Mallets of the new design. Another instance was the designing of the special Mountain type locomotives for use in heavy passenger service on the Chesapeake & Ohio, as described in the *Railway Age Gazette* of September 22, 1911, page 555. These locomotives are used on 96 miles of mountainous district and are hauling ten to twelve-car trains; the Pacific type locomotives which were used formerly were able to handle only six-car trains. Still another instance is the Mikado locomotives for burning lignite, which are being so successfully used by the Oregon Railroad & Navigation Company, as described in the January 27, 1911, issue of the *Railway Age Gazette*, page 167. Undoubtedly there are many cases between the two extremes mentioned above where locomotives are being used successfully, but would undoubtedly give far better results had the design been better suited to the service for which they are being used. Often improvements can be made in power which was originally well suited to the conditions; for instance, the Chicago & North Western is at present equipping all of its freight locomotives with superheaters to secure the marked advantages in economy and efficiency that have been demonstrated by tests which have been made on that road and are described in this issue.

THERE was a remarkable increase in November in orders placed by railways for locomotives, cars and rails. The orders given within four weeks exceeded those for months before. There has been considerable speculation as to the cause of this change in business. Doubtless it was due to a number of causes. The low level to which prices of some kinds of equipment and supplies had sunk was one of them. Another, doubtless, was that the car surplus went pretty low in the latter part of October. Then, most roads had been retrenching severely; it was becoming imperative for some to begin to buy unless their equipment and track were to be allowed to get into bad condition; and when some begin to order others promptly follow suit for fear that so many orders will get in ahead of their own that there will be excessive delay in filling them. It is an interesting and important question whether the increase in orders is merely a temporary "bulge," or the beginning of a buying movement that will continue. Probably it will be some time before orders will equal those back in the palmy days of 1905, 1906 and the early part of 1907; but it is impossible to believe that they will not continue to exceed what they have been, on the average, during the last four years. The railways have been out of the market, comparatively speaking, for a long time. This has been partly because of the agitation regarding regulation; partly because general business conditions have been unfavorable. The agitation regarding regulation is growing less; public opinion about the roads is more intelligent and favorable than in a long time; there is no threat of heavy reductions in earnings by regulation, except that involved in the Pacific coast rate cases. Labor is showing more disposition to be reasonable in its demands. There are signs of an improvement in general business conditions; the increase in purchases by the railways themselves will help stimulate that improvement. Furthermore, railway purchases have for some time been relatively so small that in many cases they must be increased if the properties are not to be allowed to deteriorate unduly. The car surplus on November 22 showed a decrease as compared with November 8, whereas at this period it has usually shown an increase. Various facts indicate that the available supply of cars is getting too low. Now, orders for equipment cannot be filled instantaneously; and if there should be in the fall of 1912 one of those big increases in traffic such as took place in the years before the panic of 1907 there might be, unless meantime many new cars and locomotives were acquired, a congestion of traffic that would cause heavy losses to both commercial interests and the railways and once more inflame public sentiment against the roads. On the whole, assuming that earnings and the money market will be such that it can be done, there seems good reason why railway buying should be very substantially larger for some time to come than it has been for some time in the past; and, in view of conditions alluded to, there appears ground for believing not only that it should be, but that it will be.

LOCOMOTIVE DRIVING SPRINGS.

TECHNICAL articles on driving springs are comparatively few, and the subject has not been treated in as comprehensive a manner as its importance would seem to demand. It is not our purpose to supply this deficiency, but rather to help set in motion the investigations which are necessary for a proper measure of the relation of the cost of spring maintenance to that of the other principal details of locomotives, and the adoption of a new specification for locomotive springs, which will include methods of manufacture. The Master Mechanics' Association has not considered the subject in recent years, and its earlier treatment has little value when applied to modern practice. The specification for plate spring steel has remained the same for years, with the requirement of 1 per cent. carbon, and it is not at all certain that this is the correct proportion for maximum economy, especially when the steel has an alloy content.

The spring space on large locomotives is about the same as that for small or medium size ones, but the maximum load per axle has now reached 60,000 lbs., or about double that on many engines of moderate size still in service. The load on the driving springs has increased in the same proportion, but the length of the springs remains about the same, and it is not possible to obtain the same flexibility with the heavy spring with numerous plates. While the normal working stress may be the same the inertia of the mass and the friction of the plates

prevent the easy motion which is obtained in the lighter spring. The increased number of plates is attended by a greater lack of uniformity in the tempering and strength of the steel in any complete spring, and, consequently, there is greater stress in some plates than in others, and the weak ones finally break. There is then added to the ordinary wear the expense due to reduced mileage and to the replacement of the spring.

On certain British railways the number of driving spring failures amount to 15 per cent. per annum, and it is probable that in this country the percentage is still greater. The actual work of repairing springs has become so great in amount that most of the larger railway systems in the United States have a separate department for spring repairs, equipped with special machines similar to those used by the spring manufacturers. Little attention has been given to possible improvements resulting from the use of a more suitable grade of steel, or to the proper heat treatment of spring steel. It is true that alloy steel has been used to a limited extent, but the alloy manufacturer has been more enterprising in demonstrating the advantage of improved spring steel than the spring maker. The latter and the railways must work together in a more systematic investigation of the economic value of alloy steels for springs. There is the objection of increased cost, but is the information at hand to show whether or not it would be good business policy to pay 20 to 30 per cent. more for a grade of steel which would double the life of springs? The difficulties connected with such an investigation are complicated by the fact that while the good results might be obtained from springs made at one shop the expensive steel might easily be spoiled or so treated at another shop that no additional life would be obtained from the springs. This naturally leads us to the heat treatment of steel and the facilities for such operations.

It has been shown by tests that the elastic limit of 1 per cent. carbon steel can be made to vary from 80,000 lbs. per sq. in. to 240,000 lbs. per sq. in. by changes in the heat treatment, the low figure representing samples annealed in lead, while the high figures are for steel hardened in water at a high temperature with the temper drawn at a much lower temperature. The elastic limit of tempered steel may be as low as 140,000 lbs. per sq. in., depending on the temperature at which it is drawn. To secure the desired strength and obtain uniform results requires careful and accurate work. The heat treatment of spring steel is a delicate task, requiring proper methods of heating the steel uniformly to the proper temperature, and cooling it in a medium whose temperature and heat conductivity can be kept nearly constant. It is surprising that the spring maker has been able to gage the higher temperature for quenching and hardening by the color with sufficient accuracy to get fairly uniform results, but the lower temperature for drawing the temper is below red heat, and its degree must be gaged in a rough way by the appearance of the flame in the furnace.

Electric pyrometers have been devised for measuring the temperature of the furnace, and of the bath used in quenching, and also for recording these temperatures by a Bristol gage; but such refinements have not come into regular use in spring manufacture. They were used in a series of tests made by the Baldwin Locomotive Works in 1907, and the results of different heat treatments on the transverse electric limit of spring steels were reported in a paper read by Lawford H. Fry at the Copenhagen Congress of the International Society for Testing Materials, in September, 1909. During the past year the Pennsylvania Railroad has conducted similar experiments with scientific refinement; these tests have included steels of different contents of carbon with different heat treatments, and the results have had a marked effect on prolonging the life of locomotive driving springs.

There is a large field for investigation and an opportunity for a reduction in the cost of locomotive repairs, which is now well started, but is not being pushed to the extent of bringing these refinements of spring manufacture into regular use. The railway testing engineers should frame a new specification for plate springs which would include more accurate and uniform heat treatments. The costs of maintenance of plate springs per locomotive per year should be known so that a proper estimate can be made of the increased price which could be profitably paid for springs which will give a much longer service than those now in general use.

THE EXPANSION OF RAILWAY COMMISSIONS.

THE development of the state railway commissions of the country during the last few years has been characterized by the great expansion of the powers of those bodies. This has been true in the cases where the railway commission has been allowed to retain a distinctive and separate organization. But it has been even more marked in the many cases where the old railway commissions have evolved under legislative enactment into public utility bodies, with jurisdiction over about every corporation that has a public or quasi-public relation. State railway commissions were originally such pure and simple ones, with very limited powers over the steam lines exclusively. The extension of powers to the street railways was easy and logical. But now they are fast becoming merged into general public utility commissions where the railway is but one branch of commission energy. The double commission of New York state is perhaps the most conspicuous example. But Connecticut, after her railway commission has existed for 57 years, has merged it in a general utilities body with greatly increased functions; and in Massachusetts a movement seems to have definitely begun for merging four public service commissions in one—economy and uniformity being among the arguments used in its favor. Many state legislatures are soon to meet again. And, although the pace of anti-railway law making visibly diminished last year, it will be strange if the movement toward the conversion of the railway commission into the amplified public service commission does not persist.

This progressive and steady change from special commissions to general commissions is one of importance from several viewpoints. It is obvious that it almost necessarily shifts the functional character of a commission's work. A commission with but one objective—say, for example, the gas and electric light commission of Massachusetts—can be special experts themselves and in a large sense join both judicial and administrative labor. But expand its jurisdiction to steam roads, street railways, telephone and water companies and the rest, its functions then change fundamentally. Its range of duties becomes too large for individual energy and judgment. It must rely more and more on delegated powers, on expert testimony, on a group of inspectors likely to be very numerous and of uncertain and varying, if not doubtful, capacity. The commission thus becomes, in a decided way, judicial, and may often be almost legislative, as is the case not seldom with courts. As a centralized body with a good deal of patronage, the change has evidently its dangers. That, however, depends much on the personnel of the utilities commissions. Their greatly increased responsibilities accentuate the old argument against the old evils of partisan patronage and, probably, in the long run will tend to prevail against it. There are some responsibilities from which even the office-seeking politician will recoil, and it must, at least, be said that the office of a general public utilities commissioner, even though the salary be large, will never be sought as a sinecure—or, if sought, not long held as such.

Turning from the civic to the railway viewpoint, the change from special to general in state commissions has both its advantages and disadvantages. Expert testimony, as has been said, appears likely to figure much more generally in the decisions of the general commission than of the old special commission, especially when large interests are at stake. Genuinely expert evidence should be welcome to every railway corporation, and even masquerading inexpert evidence cannot be much worse than an inexpert commission acting on its own evidence. Real expert testimony is also a direct check on any demagogical commission tendencies. It may also be said that broader diffusion of com-

mission duties makes the railway less of a target than heretofore. On the other hand, a railway company seeking a positive ruling may suffer from the same cause of diffused and complex duties of a general commission and from its vexing delays, often when the most simple matters are up for decision. Just here is one of the worst vexations in the transition from the separate railway commission to the general utilities body. Is it within human power for such an organization to cover both intelligently and promptly its greatly widened field of duties, especially in a large state?

With all these drawbacks attending the evolution of the old state railway commissioner into a general public utilities official, there is in other directions some room for optimism. He will be better paid. He will, in consequence, be more often than heretofore a man who, whether in successful trade or profession, is willing to give his time to public duty. The increased responsibilities of the place will call for more discretion on the part of the appointing power, usually the governor of the state; and, finally, this new stage of commission evolution almost surely marks the extinction of railway commissionerships as sinecures. This last, alone, is a clear and positive betterment, and is in the direction of securing, sooner or later, that individual quality of training, judgment and integrity without which any state commission fails, and with which a state commission may get along even in the face of the complicated interests which now so deepen the problem—and deepen it not only in state but in federal relations.

RAILWAY BONDS AND MUNICIPAL BONDS.

ATTENTION has of late been called to the decline in price, and consequent increase in the return to the investor, of the American railway bond. The truth is that the decline is but part of a pretty general fall of bonds of all corporations reaching over the last year or two. Actual tabulation of quotations in such a matter are apt to be illusory, as they vary so much with the periods and the particular classes of the securities selected. Yet in such an analysis, remembering that the prices of the highest group of securities is a test, one might point to figures showing that three months ago fifteen different issues of railway bonds of the "savings bank" class sold on an average as high as 4.16 basis of yield to the investor. Or, to be more specific, one finds that recently the New York City "long" 4s have been selling at par, while the first mortgage long 4s of the Union Pacific have been selling a little above it. But certain special causes connected partly with increase of debt, extravagance and the law of supply and demand detract from the value of the quotations of New York City issues as a standard. More suggestive is the statement of the *Wall Street Journal* that "From the first half to the last half of this decade . . . the average rise in yield of all municipal bonds was about 0.37 points, or 10.62 per cent. of itself as compared with 0.11 points or 2.66 per cent. of the yield of railway bonds." But the classes of securities in each case here selected for the comparison of yield to the investor are not given.

As a test, though not an absolutely accurate and just one, of municipal credit, we may cite a financial despatch of a few days ago which reads: "The city of New Britain, Conn., has awarded $100,000 4½ per cent. water bonds maturing in 1941 at 101.168, a basis of 4.12 per cent." Yet the city of New Britain is a prosperous New England municipality, perfectly solvent, with a population of 43,916 by the last census as compared with 28,202 in 1900, a gain of nearly 56 per cent.

Why anything like exact returns based upon market quotations of railway and municipal bonds are impossible can easily enough be seen. Speculative and low or even middle class railway bonds obviously cannot be taken as a basis, so wide is the range of quotation and so much do they shift from time to time. Though to a much less degree, the variation is a fact also in the case of the higher grade of railway bonds of the savings bank type. A long list of railway bonds legal for savings bank investment in New York thus show a variation in the investment return of three-quarters of 1 per cent. A legislature in a New England state, a few years ago, opened to savings bank investment the bonds of a western railway which has since gone into the hands of a receiver. Municipal bonds, whether open to savings bank investment or not, have also their considerable mutations in price. They are affected by the size of the municipality, the extent of the local market, the amount of the debt of the municipality itself, its ratio to the assessed valuation or revenue of the city, town, village or school district, the state laws bearing on debt limitation and, perhaps above all, tax exemptions or lack of them. The same matter of taxation bears directly on the market price of the railway bond too. Some states tax railway bonds severely, other states give them liberal exemptions. One state takes the tax out of the holder of the railway bond, another state out of the railway corporation, and a third state commutes the high local tax on the bond for a lower tax to be paid to the state treasury. All these divergent conditions bear upon the market price and must obscure any railway and municipal comparison based upon the market quotation.

When, however, the appeal is made to more familiar and general facts the investment situation in the case of the railway bond versus the municipal security is outlined more clearly. What has actually come to pass during a period of somewhat prolonged depression has been the rise of influences prejudicial to the railway bond. Unlike the municipal bond, it has had to resist the sentimental force of the fall of its outlying stock and of junior bonds and debentures. It has had to face the two market competitions of large issues of industrial and street railway bonds, all making a higher return. In the case of the private investor these two investment rivalries have undoubtedly forced down the municipal security also; but, on the other hand, the municipal security has probably had the advantage over that of the railway of more stable "institutional" demand and absorption, nor has it had to meet state and federal regulation, except in the matter of statutory restriction of municipal debt—an influence promoting and not injurious to municipal credit. Where the municipal bond has undoubtedly suffered has been in too lavish municipal expenditure, resulting large expansion of issues in proportion to municipal capital and revenue, and the market effects in supply and demand. But even allowing for that, the way in which the "good" railway bond has apparently nearly or quite nearly held its own against the municipal security is remarkable. It is more impressive still as an index of the stability of railway credit if the theorem of the *Wall Street Journal* that the railway bond has comparatively more than held its own is accepted.

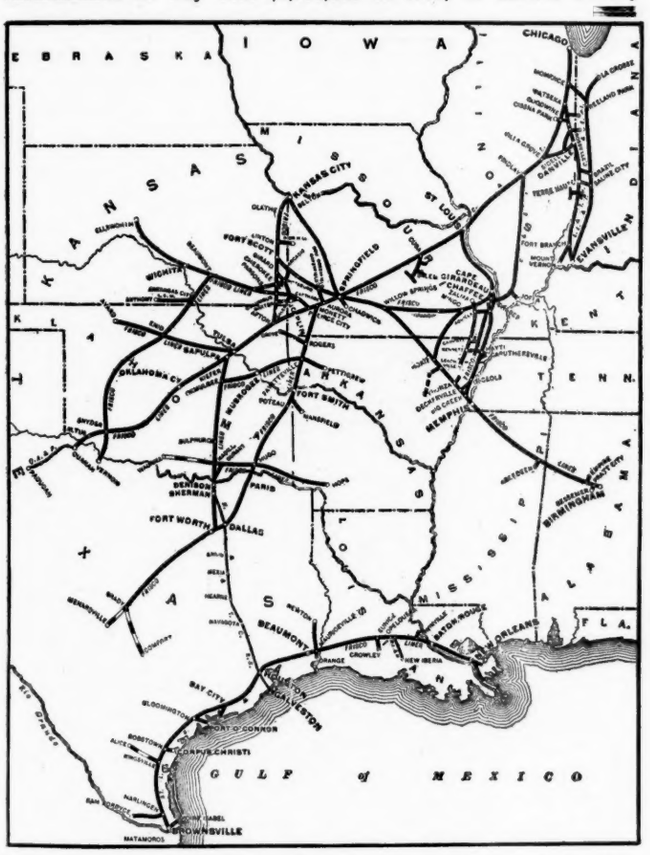
ST. LOUIS & SAN FRANCISCO AND CHICAGO & EASTERN ILLINOIS.

A GOOD deal of information about the future outlook of the St. Louis & San Francisco and its present financial standing is conveyed by the statement of the fact that, in the fiscal year ended June 30, 1911, 276 industrial plants were located on the lines of the Frisco itself, with an estimated capacity of 59,000 carloads per year, and on the Chicago & Eastern Illinois, 50 new industries, with an estimated capacity of 10,500 carloads; and that the company is at present paying well over 6 per cent. for money to make additions and improvements, as shown by the sale to Speyer & Co., New York, a few days ago, of $2,553,000 general lien 15-20 year 5 per cent. bonds which were offered to the public by the bankers at 89, yielding 6⅛ return on the investment.

Although the St. Louis & San Francisco and the Chicago & Eastern Illinois are operated separately, but with many of the same officers, it is proper to study the results of their operation as one property, since, as far as physical plant is concerned, the C. & E. I. forms a highly valuable Chicago division for the St. L. & S. F. Although operating conditions in many ways are quite different on the Frisco itself from those on the C. & E. I., there is no greater difference than between different divisions on many other properties. The Frisco itself in its annual

report gives both a separate statement for its own property and a combined statement showing the operations of the two properties. Taking the two properties together, they operate a little over 6,000 miles of railway, and in 1911 earned gross $55,440,000, or $2,520,000 more than in 1910. Expenses were greater by $1,030,000 and taxes by $330,000, so that operating income totaled $15,630,000 in 1911 and $14,470,000 in 1910. On both the Frisco and the C. & E. I. there is an increase of something over 1 per cent. in freight revenue, but on the Frisco an increase of 13.7 per cent. in passenger revenue, and on the C. & E. I. an increase of 12.2 per cent.

With this increase in passenger business, and in the light of increases in wages, we might expect to find operating expenses much higher in 1911 than in 1910; but, as has been mentioned, the increases in operating expenses were not large. The saving, however, was made entirely in maintenance. On the C. & E. I. maintenance of way cost $1,150,000 in 1911, or almost exactly



The St. Louis & San Francisco and the Chicago & Eastern Illinois.

the same as in 1910; increases in the cost of maintaining joint track and of slightly larger sums spent for other track material being offset by decreases in the sums spent for roadway and track (track labor largely); removal of snow, sand and ice; and bridges and trestles. On the St. Louis & San Francisco, maintenance of way cost $5,470,000 in 1911, or 5.3 per cent. less than in 1910; and the smaller sum spent was due very largely to the fact that 15.59 per cent. less was spent on bridges, trestles and culverts; 4.58 per cent. less on roadway and track; 28.69 per cent. less on rails, and 85.63 per cent. less on ballast. Maintenance of equipment cost $1,980,000 on the C. & E. I. in 1911, a decrease of 3.2 per cent., and $5,740,000 on the Frisco, or 3.40 per cent. less than in 1910. The saving on the C. & E. I. was largely in the cost of repairing freight train cars, and on the Frisco almost entirely from the smaller sum spent for repairs and renewals of locomotives.

As would be expected with such substantial increases in passenger business and with the increase in wages, transportation expenses were higher in 1911 than in 1910. For the two properties, transportation cost $20,280,000, or $1,480,000 more than in 1910. This shows, probably, actual economies in the operating department, and this surmise is strengthened by traffic statistics. For instance, while the number of passengers carried one mile on the Frisco totaled 506,000,000 in 1911, an increase of 6.1 per cent., passenger train miles totaled 10,590,000 in 1911, an increase of 4.7 per cent. Revenue ton mileage on the Frisco totaled 2,676,000,000, an increase of 154,000,000 over 1910. On the C. & E. I. the total number of tons of revenue freight carried one mile in 1911 was 1,950,000,000, a decrease of 42,800,000.

Naturally the trainload and kindred figures for the Frisco and the C. & E. I. show sharp contrasts. The C. &. E. I. has a freight traffic density of 2,020,000 tons, while the Frisco has a freight density of 520,000 tons, or only about a quarter as much. The average trainload of revenue freight on the Frisco is 221 tons, or about two tons less in 1911 than in 1910; on the C. & E. I. the average trainload was 561 tons in 1911, or about 11 tons less than the year before. An increase from 9.8 mills in the revenue per ton mile in 1910 to 10.5 mills in 1911 for the Frisco, and from 4.6 mills to 4.8 mills on the C. & E. I., suggests that the smaller train loading in 1911 as compared with the year before was due to a smaller proportion of low grade traffic. The striking difference between the average ton-mile rate for the two companies suggests the difference in character of traffic handled. On the C. & E. I., of the total 12,440,000 tons carried in 1911, 8,090,000, or 65.04 per cent., was products of mines, comparing with 7,780,000 tons, or 64.08 per cent. of the total tonnage, in 1910. On the other hand, of the total 17,130,000 tons carried on the Frisco in 1911, 38.57 per cent., or 6,610,000 tons, was products of mines, comparing with 7,200,000 tons, or 40.41 per cent. of the total tonnage, in 1910. On the C. & E. I., products of forests furnished only between 10 and 11 per cent. of the total tonnage, whereas on the Frisco these products furnished between 19 and 20 per cent.; and products of agriculture on the C. & E. I. furnished between 7 and 8 per cent., and on the Frisco between 15 and 16 per cent. In 1911 there was a notable increase in the tonnage of cotton carried by the Frisco, an increase which amounted to 31.26 per cent.; and while cotton even then only furnished 1.42 per cent. of the total tonnage, it is highly profitable traffic both of itself and because of the development of the territory which the increase in tonnage denotes. The fiscal year ended June 30, 1911, was not a good one from point of view of quantity of cotton raised, while the present crop, the movement of which began since the close of the fiscal year, is an extraordinarily large one.

The best basis for judgment as to what the future possibilities of the property are should be such indications as we get in studying the traffic and commodity figures, and what we know of the development of the territory that it serves. The Frisco is at present capitalized higher than its earning powers warrant, and the Frisco itself probably has a good deal of very lightly built railway. There are no figures showing the weight of rail in track on the St. Louis & San Francisco, although the C. & E. I. gives such figures for its own line; and on this property, at the end of 1911, 23.86 per cent. of main, second and third track was laid with 85-lb. rail, and 33.11 per cent. was laid with 80-lb. rail. There was still, however, in track 24 per cent. of 60-lb. rail. The Frisco, with its much smaller traffic density, would show a much larger proportion of light rail, we may be pretty sure.

The consolidated balance sheet of the Frisco and the C. & E. I. shows $5,890,000 cash on hand at the end of 1911, comparing with $4,790,000 on hand at the end of 1910. Total liabilities at the end of 1911 amounted to $18,145,000, of which only $1,600,000 was loans and bills payable, while at the end of 1910 total working liabilities amounted to $16,800,000, of which $6,510,000 was loans and bills payable. In working liabilities, in the year 1911 there are included $5,030,000 matured debt, against which there is deposited in the hands of trustees, in

addition to the cash which is held in the treasury, $5,030,000 cash.

The following table shows the principal figures of operation for the St. Louis & San Francisco and the Chicago & Eastern Illinois in 1911, compared with 1910. Offsetting accounts have been eliminated:

	1911.	1910.
Average mileage operated	6,154	6,037
Freight revenue	$37,493,290	$36,904,360
Passenger revenue	14,094,359	12,416,144
Total operating revenues	55,440,572	52,916,295
Maint. of way and structures	6,622,740	6,932,198
Maint. of equipment	7,715,323	7,983,687
Traffic	1,365,629	1,304,233
Transportation	20,275,267	18,794,766
Total operating expenses	37,664,863	36,630,826
Taxes	2,149,956	1,820,310
Operating income	15,625,752	14,465,159
Gross corporate income	17,619,914	16,558,084
Net corporate income	1,721,351	1,347,623
Dividends—		
(4 per cent. on St. L. & S. F. preferred)	199,742	199,742
(6 per cent. on C. & E. I. preferred paid to others than St. L. & S. F.)	157,140	157,140
Surplus	1,364,469	990,741

NATIONAL RAILWAYS OF MEXICO.

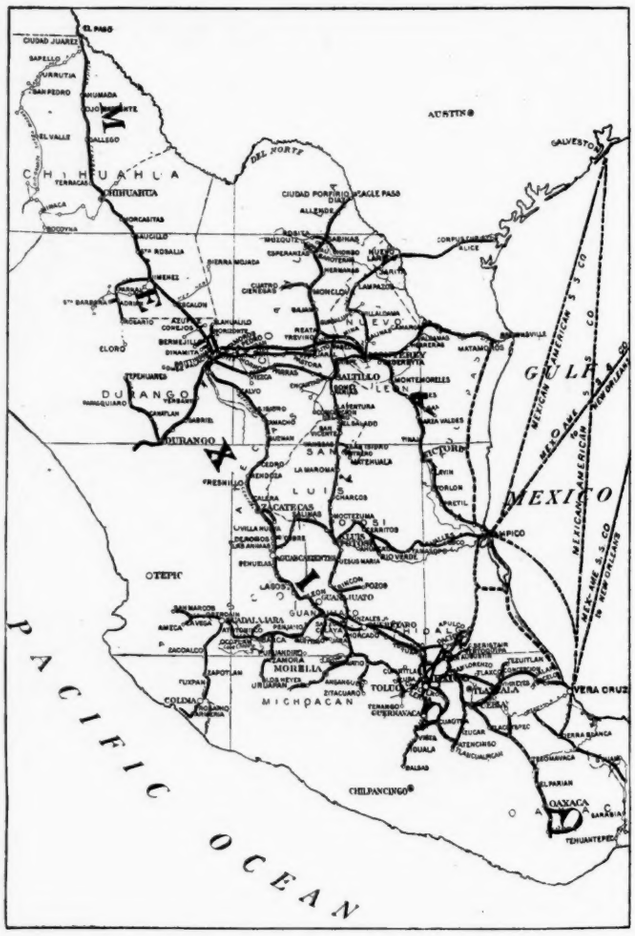
IT seems probable that the Mexican revolution did more temporary harm to the credit of the National Railways of Mexico than to either its earnings or its physical plant. The company earned in 1911 $30,515,000,* as against $30,740,000 in 1910. This is not quite as favorable a statement as would appear on its face, since $440,000 of the total earnings in 1911 was from "construction freight," against $110,000 from "construction freight" in 1910. Even taking this into consideration, however, the effects of the revolution on earnings were not serious. On the other hand, the company needs to finance permanently a rather large floating debt. The disquieting effect of a change in government in Mexico has made the market for National Railways of Mexico securities so unsatisfactory that the management found it more advisable to continue to borrow from bankers on short term notes rather than to try to sell securities.

It is worth while hastily running over once again the history of the Ferrocarriles Nacionales de México (National Railways of Mexico). This was a consolidation in April, 1908, of the Mexican Central, the National Railroad of Mexico and certain other less important railway companies. Securities of the merged companies were deposited and exchanged for securities of the National Railways. The government of Mexico guaranteed the general mortgage 4 per cent. bonds, of which $50,735,000 are now outstanding, and acquired a controlling interest in the stock of the company. It will be seen, therefore, how closely connected the credit of the National Railways is with that of the Mexican government.

Insofar as the exchange of securities of the old companies is concerned, the merger plan seems to have been almost entirely successful. At the close of the fiscal year 1911, 97.50 per cent of the total issue of Mexican Central securities and 99.73 per cent. of the total issue of National Railroad of Mexico securities had been deposited under the plan. This left $5,480,000 Mexican Central securities outstanding and $170,000 National Railroad of Mexico. These are not much smaller amounts of securities undeposited than were outstanding at the beginning of the year; but on July 1, the outstanding $38,000 first mortgage bonds, $3,660,000 consolidated mortgage bonds and the $11,000 registered income bonds fell due, and all those that were presented were paid by the National Railways. The management has also bought other outstanding securities when they could be secured at a reasonable price, so that at the time of the issue of the annual report, which is dated October 4, 1911, there were only $2,030,000 obligations called for conversion and not yet deposited.

It is, of course, quite impossible to trace the economies and advantages arising from the merger of the companies without a most intimate knowledge of the property. However, the showing made in a year in the last six months of which, there was a state of revolution and guerrilla warfare is surprisingly good. While the revolutionists, and probably at times the government forces, tore up track or destroyed bridges for military reasons, there was comparatively little wanton destruction of railway property, and the National Railways hopes to be reimbursed for some, at least, of the damage caused to its plant by military occupation.

The serious aspect of the revolution, from the point of view of the National Railways, was the temporary effect on its market for securities. There were rumors, of course, that when President Diaz left office the Mexican government in some way lost control of the company. These rumors were absolutely denied by the officers of the company and appear to be entirely unfounded. The company sold during the year $1,070,000 general mortgage 4 per cent. bonds to pay for additional rolling stock contracted for between July 1 and December 31, 1910, and $3,860,000 general mortgage 4 per cent. bonds for additions and betterments to pay for work done between January 1, 1910, and March 31, 1911, and for equipment contracted for between January 1, 1911, and March 31. There were also authorized to be



The National Railways of Mexico.

issued $4,380,000 general mortgage 4s and $6,950,000 prior lien 4½ per cent. bonds, which the directors were given the option of selling or of depositing as collateral. The company found it unprofitable to sell these bonds and therefore issued $10,000,000 2-year 4½ per cent. notes and also sold $5,000,000 notes to Lazard Brothers & Co., London, at a discount of 4½ per cent.

At the end of the fiscal year the company had $765,000 working cash and $7,005,000 cash deposited for payment of the Mexican Central bonds maturing July 1 and for the interest payment on National Railways bonds, which interest was due in July and September, etc. This is plainly too small a working capital for a company doing the volume of business that the National Railways does; and, as has been stated, the directors found that the most profitable way of strengthening their cash position was through borrowing from bankers until such times as securities could be sold. At the end of 1911 the company had outstanding

*United States gold. The Mexican dollar is taken at 50 cents.

$16,405,000 notes payable, and in November final arrangements were made for the loan by bankers to the railway company of $13,000,000, of which $5,000,000 was used to pay off a loan falling due, and the remainder for additions and betterments and working capital. The greater part of the floating debt was created during the past year.

During this year $7,400,000 was spent for additions and betterments. The company tells us that their accounting system and rules for charging sums to capital expenditures are as near like those prescribed by the Interstate Commerce Commission as is expedient with the conditions under which the company carries on its business. Of this $7,400,000, $3,575,000 was for additional equipment; $1,005,000 for bridges, trestles and culverts; $685,000 for increased weight of rail and $865,000 for a change from narrow gage to standard gage on the line between Acambraco and Uruapam.

The average miles of line operated by the National Railways was 6,132 in 1911, as compared with 5,262 in 1910. Construction work now under way is mentioned in our construction news columns in this issue. It will be recalled that on June 30, 1910, the National Railways took over the operation of the Mexican International, and wherever, in its 1911 report, the company makes comparisons of traffic, earnings, etc., with 1910, it has included Mexican International operations for both years. Total earnings amounted to $30,965,000 last year, as against $30,740,000 the year before. Operating expenses totaled $19,640,000 last year and $18,365,000 the year before. In 1911, after the payment of fixed charges, there was a surplus of $1,280,000, and after the transfer of 5 per cent. of net profits to the reserve fund, provided for in the plan of organization and the payment of the full 4 per cent. on the first preferred stock, there was a surplus of $61,500 for the year. In 1910, profit, after the payment of fixed charges, amounted to $1,420,000, and after the transfer of 5 per cent. of net profits to the reserve fund, and the payment of 3 per cent. dividends on the preferred, there was $480,000 surplus. In 1911, however, an additional 1 per cent. calling for $290,000 was paid out of the 1910 surplus on the first preferred stock, so that the total 4 per cent. was paid for in both 1911 and 1910, and on this basis the 1910 surplus, after the payment of dividends, amounted to $190,000.

The increase in operating expenses is entirely accounted for by an increase in the expenses of maintenance, transportation taking a slightly smaller proportion of gross revenue in 1911 than in 1910. The operating ratio in 1910 was 59.74, and in 1911, 63.22; conducting transportation consumed 27.82 per cent. of gross in 1910 and 27.68 per cent. of gross in 1911, while maintenance of way and structures consumed 15.79 per cent. of gross in 1910 and 18.02 per cent. in 1911.

The total tonnage* of freight carried in 1911 was 6,760,000, as against 7,630,000 tons in 1910. Of this tonnage, 51 per cent. was mineral products in 1911, while 57 per cent. of the 1910 tonnage was mineral products. The important gains made last year were in the tonnage of products of forests and of products of agriculture. There were 870,000 tons of forest products carried in 1911, as against 820,000 tons in 1910; and 1,510,000 tons of products of agriculture, as against 1,480,000 tons the year before.

It seems strange indeed for a railway to receive as much per ton per mile as per passenger per mile, but the National Railways does actually charge only about the same per passenger per mile as per ton per mile. The average receipts per ton per mile in 1911 were 1.463 cents, an increase of 6.57 per cent. over 1910; and the receipts per passenger per mile were 1.456 cents, a decrease of 2.27 per cent.

During the year the company bought 33,160 tons of domestic 85-lb. rail and 33,560 tons of 75-lb. foreign rail. About 215 more miles of 85-lb. rail was in track at the end of 1911 than at the end of 1910. This is on the entire system, and some of this rail may have been in track of the Mexican International in 1910. There was also about 548 miles of additional 75-lb. rail at the end of 1911. There is still, of course, a great deal of light rail, some of it accounted for by the fact that the company operates 522 miles of narrow gage lines. Of the total 6,177 miles of main line and branch tracks, 1,665 miles are 56-lb. rail, something over 800 miles are of lighter rail, and the greater part of the rest of the track is 85, 75 and 70-lb. rail.

*Tons of 1,000 kilograms, about 2,200 lbs.

The purchase of about half of the tonnage of new rail from Mexican mills is interesting because of the policy of the management, which tends to make the National Railways as far as is possible a Mexican institution. In 1911, for instance, there were 30,874 employees, and, of these, only 3.95 per cent. were foreigners. Of the total 26,106 employees in service at the end of 1910, 4.12 per cent. were foreigners.

The following table shows the principal figures for operation in 1911, compared with 1910:

	1911.	1910.
Average mileage operated	6,132	5,262
Commercial freight revenue	$22,160,383	$22,631,302
Construction freight revenue	438,491	107,639
Passenger revenue	6,328,555	6,115,004
Total operating revenue	30,967,211	30,741,574
Maint. of way and structures	5,580,966	4,852,150
Maint. of equipment	4,394,194	3,883,258
*Transportation	8,570,709	8,553,173
Total operating expenses	19,639,673	18,364,159
†Net operating revenues	11,327,538	10,484,368
Gross corporate income	11,799,985	11,078,636
Net corporate income	1,278,936	1,418,285
Reserve fund	63,947	70,914
Dividends	1,153,316	935,901
‡Surplus	61,673	482,384

*Includes the greater part of traffic expenses.

†These figures and all the figures below in this table are our own comparisons made between the 1910 and 1911 report. The figures above are comparisons made in the 1911 report by the company itself.

Taxes and rentals are not shown separately, so that we cannot give net corporate income after the deduction of taxes.

‡As explained in the text, an additional 1 per cent., calling for $288,329, was paid on the preferred stock in 1911 from the surplus carried over from 1910.

NEW BOOKS.

Progress and Prosperity. By William De Hertburn Washington. The National Educational Publishing Co., New York. Half morocco. 6½ x 9½. 887 pages. Price, $4.50.

The author has produced a unique book. It is devoted chiefly to the presentation of facts about, and the discussion of, railway matters, although it dips into many other affairs—such as banking, ocean and inland water transportation and the good roads question. Mr. Washington begins his history of transportation at a period long anterior to the invention of the railway. Indeed, he goes clear back to the time before man had even domesticated the peaceful ox, and had, therefore, to bear his burdens himself. He traces the development of the corporation, and the railway corporation in particular, and then enters upon a discussion of various railway questions which are now engaging attention, including methods of rate-making, capitalization, the cost of constructing railways, the profits railways earn and should be allowed to earn, etc.

He has developed some novel ways of making statistics regarding the costs of construction and the profits of railways intelligible. For example, he invented, we believe, the figure "profits per day on a mile of railway." He shows that the profits per mile per day of the New England lines in 1907, the most prosperous year in their history, were only $4.08, that for 1882-1886 they were only $2.69 per mile per day, and from 1882 to 1891 but $2.75 per mile per day. The best profits ever made by the railways of the Gulf and Mississippi valley states, he shows, were made in 1905, when they amounted to 94 cents per mile per day. They had a grand average of 39 cents as their return during the ten years from 1889 to 1898. No union carpenter, he says, would work an eight hour day at the wages per mile received by the railways of the New England states, while the profits per mile received by the Gulf and Mississippi valley lines would hardly have paid the tip that would be given to a waiter for serving a single family in a dining car.

One of Mr. Washington's interesting statements is "if our railways were valued at the average per mile at which German roads are capitalized, they would be capitalized for no less than

$25,000,000,000, or there would be $999 extra on each thousand of our present net capitalization; upon the French basis they would be valued at $32,536,000,000, or $2,437 for each thousand dollars of our present net capitalization; upon the Belgian basis, at $41,496,000,000, about $3,105 for each thousand of our net capitalization; upon the English basis, at $64,273,000,000, or practically $4,824 for each thousand dollars of our net capitalization."

The author has acquired rare skill in so presenting dry facts as to make them interesting, and many persons who may be at first repelled by the peculiar, and even grotesque, typography of the book will be surprised when they begin to read it to find how it attracts and holds them. Its peculiar typographical appearance is due to the fact that Mr. Washington has put into it over 1,200 illustrations, most of which are pertinent to the subject and help to add to the interest of the text, although many of them do not seem to have very much relation to the subject matter. It is unfortunate that a book which is well written, and is a veritable encyclopedia of information about railways both in the United States and abroad, should be sent out without any index.

The Modern Railroad. By Edward Hungerford. A. C. McClurg & Co., Chicago. Cloth. 8⅜ x 5⅝. 476 pages. Price, $1.75.

Mr. Hungerford has avoided discussion of the various issues in controversy between the railways, on the one hand, and shippers, travelers, employees and public authorities, on the other. He set out, apparently, to write a book that would reveal to the people in general what may be called the "human" side of the railway, and he has done it with fidelity and at the same time in chapters that are extremely interesting.

He starts off with some historical matter about the building and development of railways. Then he tells about bridges, about passenger stations, about freight terminals and yards, and locomotives and cars, giving a large amount of information in a form that makes it very readable. His chapter on "Rebuilding a Railroad," tells briefly why it has been necessary to reconstruct many of the old, cheaply built lines into the expensive railways of today, and narrates a good many anecdotes about this important work. The chapter on "The Railroad and Its President," will convey to a good many persons a better understanding about what railway presidents have to do and the kind of men who occupy their offices than would a good many chapters written more in the essay, and less in the anecdotal, style. From the president's office he goes to that of the general manager, and then to that of the superintendent. He turns from them to the general passenger agent and his office, and then in his chapter on "The Luxury of Modern Railroad Travel," has some things to say that will make every traveler who reads the book and then rides on the fine, fast trains of this country look about him and better observe and appreciate their elegance, comfort and speed, and the expense that it has been necessary to incur to provide these things.

He tells in an entertaining way how freight traffic and suburban traffic are built up and handled; and he even goes into the mechanical department to describe with what science its work is done. "There is," as he says, "no guess work about the modern railway, and many hundreds of thousands of dollars are spent each year in scientific tests of every sort and in salaries of men who devote their entire time to this work; and the railways reap the benefit and many hundreds of thousands of dollars in operating economies."

It would be a good thing for the railways, and a good thing for the public, if every man in the United States would read Mr. Hungerford's book. They would know very little more about rates, and valuation, and capitalization, when they got through than when they started, but they would know a good deal more about the efforts that thousands, yes, hundreds of thousands, of men have been, and are, making to give the public ever better and cheaper service, of the way that they have done it, and of the results that they are getting; and if the public understood these things its attitude toward railway matters would be altered and improved.

Letters to the Editor.

COMMENT ON MR. FRITCH'S VIEWS ON FUEL ECONOMY.

Chicago, November 29, 1911.

To the Editor of the Railway Age Gazette:

In the valuable and suggestive article on "Opportunities for Economies on Railways," published in the *Railway Age Gazette* of November 24, page 1059, the author reaches the conclusion that not more than 40 per cent. of the actual heat value of fuel is utilized in locomotives in producing tractive power or effective work. Under "item 8" the statement is made that less than half the heat value of the fuel is utilized in effective work in the boiler, the rest being dissipated in losses due to various causes as outlined. These losses are given under item 2 as due to evaporating moisture in coal; under item 4, to unconsumed gases escaping through the stack; under item 5, to unconsumed fuel in cinders and sparks; under item 6, to unconsumed fuel in ashes dropping through the grate; and under item 7, to losses due to radiation and leakage.

There is evidently some confusion here, as it is my understanding that these are all boiler losses, and have been already charged out in figuring the boiler efficiency as low as 50 per cent. By a coincidence, on page 1058 of the same issue of the *Railway Age Gazette,* and directly opposite to the article by Mr. Fritch referred to, there are published the results of a very careful locomotive test which gives the boiler performance of Mallet and consolidation locomotives. The thermal efficiency of the boiler is in round figures 58 per cent. for the consolidation and 68 per cent. for the Mallet; say an average of 60 per cent., which compares closely with laboratory tests, and is based on the total dry coal fired. It is true that by figuring thermal efficiency on the basis of "dry coal fired" the item for loss due to moisture in coal is eliminated, as dry coal fired is obtained by deducting from the total coal fired an equivalent weight corresponding to the percentage of moisture in the coal, and this usually amounts to only 1 or 2 per cent. But the other items of loss due to unconsumed gases, unconsumed fuel in sparks, cinders and ashes, and the loss due to radiation are not measured and allowed for in getting the thermal efficiency of the boiler, so that it is more correct to state locomotive boiler efficiency, as only 50 or 60 per cent., including those losses. I must take exception also to the statement in the same article that "not more than 40 per cent. of the actual heat value of fuel is utilized in locomotives in producing effective work as tractive effort." This is a good definition of the "efficiency of the locomotive," including boiler and engine. If any fuel expert or scientific manager could tell us how to obtain a locomotive efficiency of 40 per cent., the coal bill of the railways would be only about one-tenth of what it now is; for locomotive efficiency does not average 4 per cent.

In the report of the test of the Pennsylvania consolidation at St. Louis in 1904 the efficiency of the locomotive is given as 3 per cent. at 160 revolutions per minute, and 4 per cent. at 80 revolutions per minute. The report of the consolidation and Mallet tests in the *Railway Age Gazette* of November 24, above referred to, gives it as 3.5 per cent. for the consolidation and 5.5 per cent. for the Mallets. Four per cent. may, therefore, be taken as a fair average figure to represent locomotive efficiency. This means that while $200,000,000 is paid for locomotive fuel per year, in the final analysis the heat equivalent of only $8,000,000 worth is utilized instead of $80,000,000 worth, as the article states. And $192,000,000 worth of coal produces no effective results in moving trains. But the $200,000,000 coal bill must be paid, and if 25 per cent. can be saved by the various economies Mr. Fritch enumerates, then there will be a saving of $50,000,000 a year, as claimed. In statements relating to fuel consumption or economy it is best to make a table showing all items which go to make up 100 per cent., and in setting down each item if care is taken the confusion and errors above referred to may be avoided.

MECHANICAL ENGINEER.

CHICAGO, November 28, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

On page 1060 of the *Railway Age Gazette* of November 24, 1911, a tabular comparison is made by L. C. Fritch, in an article on "Opportunities for Economy on Railways," to show how careful locomotive firing might have saved upwards of half the coal used on the road making the experiment. He sets up the consumption on a single test run by a passenger train consisting of from 8 to 10 cars against the average on the entire railway for the whole year 1910 made by all sorts of trains, all sorts of engines, under all sorts of conditions.

How does such a comparison prove that in 1910 there was any waste of coal? Unlike things cannot be compared. If the performance of the test passenger train and the performance of all the other trains on the system for 1910 cannot be reduced to some common denominator, then it is worse than useless to try to make a comparison. I say, worse than useless, because there has been, from the highest officers down, altogether too much of this kind of harmful playing into the hands of our critics, too much admitting that the operation of our roads is not efficient.

T. J. NORTON,
General Attorney, Atchison, Topeka & Santa Fe.

December 5, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I am much interested in the article by L. C. Fritch on page 1059 of your issue of November 4. Two very important subjects in connection with the locomotive are treated. The first is the necessity for scientific proportions to get the maximum use from the heat of burning coal coupled with correct proportions of the locomotive as a whole; the second is the importance of intelligent firing as indicated by the results of the Lehigh Valley tests.

These points are well taken, but it seems to me more important to insure that locomotives will fit the conditions of service. In my judgment the most hopeful sign in locomotive progress at the present time making for reduction in cost of operation is the tendency toward designing locomotives which embody all features of up-to-date improvements specially fitting them to suit specific road conditions in the districts where they are to be used. In my opinion this is the greatest progress which we are making in connection with the locomotive today. Scientific designing intelligently applied to operating conditions, coupled with intelligent handling of the locomotive, offers a means for greatly reducing the cost per ton-mile; a number of roads have already taken advantage of this possibility. OPERATION.

A FAIR COMMENT ON MINORITY STOCKHOLDERS' REPRESENTATION.

WASHINGTON, D. C., November 29, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In your issue for November 24, 1911, Professor William Z. Ripley of Harvard University refers to the right of the owners of the preferred shares of the Wisconsin Central, now leased to the Minneapolis, St. Paul & Sault Ste. Marie, to elect a majority of the board of directors, and adds:

> "This right is at all times vested in the relatively small amount of preferred shares of the Rock Island Company. The common shareholders have practically no voice in the management at all. The same thing is true of the New York, Ontario & Western."

The outstanding common stock of the Rock Island Company has a par value aggregating $90,874,200 (amount authorized, $96,000,000) and the outstanding preferred has a total par of $49,967,600 (amount authorized, $54,000,000) which may be a "relatively small amount," but the board of directors recently consisted of William H. Moore, D. G. Reid, F. L. Hine, George G. McMurtry, James Speyer, A. J. Miller, Ogden Mills, Roberts Walker, Benjamin Strong, Jr., James Douglas, James McLean, Arthur Curtis James, James H. Moore, E. S. Moore and H. U. Mudge. Admitting that the preferred stock was permitted to elect eight of these gentlemen, it would be most interesting to be informed whether the remaining seven actually "have practically no voice in the management at all." Professor Ripley would greatly increase interest in his article if he would supply the names of the seven members of this board who are so excluded from participation in the direction of the company's affairs.

The outstanding common stock of the New York Ontario & Western has a par value aggregating $58,113,982 and the preferred a total par of four thousand dollars. Many years ago there was $2,000,000 in preferred and although $1,996,000 of this was exchanged for first mortgage bonds it was temporarily held in a voting trust so as to exercise its right to elect eight out of thirteen directors. But this right lapsed with the payment of a dividend of three per cent. on the common stock in January, 1905, and for substantially seven years a share of preferred has had no more right to control than a share of common.

H. T. NEWCOMB.

ABOLISH THE PRESENT GIVING.

December 4, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Nothing that I have read in your columns for years past has so exactly fitted my views on a subject as the article under the heading "Abolish the Present Giving," which appeared in your issue of December 1. The system referred to is pernicious, and this has been admitted by many of the prominent supply men, with whom I have discussed the subject on various occasions during the past few years. That the giving is not personal but official is evidenced in many ways. I was appointed purchasing agent about Christmas time, and although I knew scarcely half a dozen supply men (not having been connected with the purchasing department up to the time of my appointment), I was amazed at the number of Christmas gifts received from those whom I had never met. The expensive ones were returned, with a polite note to the effect that I thought the acceptance thereof would be open to misconstruction; the inexpensive ones were retained, not because there was not just as much impropriety in keeping them as the others, but from the moral cowardice, which is common to most of us, of being afraid of being thought either hypocritical or of claiming to be better than others.

Another reason to show that the gift is to influence purchases is the fact that even those who claim it is only intended as a courtesy have nothing to say when their attention is called to the fact, which is quite noticeable, that the gifts are always *to,* but never *from,* railway officials.

I have no doubt that many supply concerns are just as much opposed to the practice as myself, but, because their competitors make presents, they follow the practice for fear they may be losers if they fail to do so.

The men who are the most notorious for making gifts are those who bear the reputation, either justly or unjustly, of influencing purchases by improper means. To a reflecting purchasing agent, the receipt of an expensive gift naturally leads to the inference that the price is excessive, as the cost of the gift inevitably must be charged to the expense of doing business, and in the end the railway company pays for it.

The practice of giving is most common with those who have high priced specialties to sell, and this is natural, because, in buying articles like bars, plates, shapes, spikes, bolts, etc., it is easy to determine by testing machine whether or not it is to the interest of the company to purchase them, but in the case of a specialty it is largely a matter of individual opinion or whim, and naturally the personal equation enters into it more than with other articles. The United States Steel Corporation, the Jones & Laughlin Steel Company, the Cambria Steel Company, the Pennsylvania Steel Company, the Republic Iron & Steel Company and most of the larger iron and steel companies have never, in all my experience, followed this practice, which they would have done had there been any good business reason for so doing.

I thoroughly approve of your article and trust it may result in breaking up the practice almost entirely. It is in line with the recent action taken to discontinue the entertainment features in connection with the Master Car Builders' and Master Mechanics' conventions each year. PURCHASING AGENT.

THE TRUTH ABOUT RAILWAY ACCIDENTS.

BY THE EDITOR.

Many articles have been printed and speeches made within recent years in which the railways of the United States have been misrepresented; but probably no other utterance about them has quite equalled in this respect an article entitled "Speed," attacking their accident record, which was written by Charles Edward Russell, and published in the Hampton-Columbian magazine for October.

This magazine, which was widely circulated, has, since the appearance of the article mentioned, become financially embarassed and temporarily suspended publication. Some of those formerly connected prominently with its business management have been arrested, charged with misuse of the mails in the sale of stock in the company owning the magazine. A few months ago Hampton's published an article assailing the Standard Oil Company. While this corporation has never been thin-skinned, and is not unused to criticism, it sued Hampton's for libel, and made it publicly retract its statement.

These facts may indicate the character of the magazine that published "Speed." Was it owing to its recent experience with the Standard Oil Company that the article under review, while attacking the railways as a whole, and even specific roads, did not mention a single one by its true name, but used such fictitious designations as "The Lake and River Railroad" and the "East and West Trunk Line?" At any rate, Mr. Russell's statements of fact and his deductions from them are incorrect in almost every particular, and if allowed to pass unchallenged are adapted, by misleading public sentiment, to do injustice and injury to the railways of this country, and injustice and injury cannot be done to the railways without reactionary effects that will harm the public itself. It is for this reason that this reply to the article has been prepared.

First, then, as to certain statements made by Mr. Russell concerning the relative speeds at which passenger trains are run here and in the old world. He says it is often stated as an excuse for railway accidents in this country that our trains are operated at higher speeds than those of Europe. He declares that the belief that this is so is an hallucination, and asserts unqualifiedly that "in average speed of passenger trains Great Britain is first, France second, Germany third, and the United States fourth." Now, the fact is that there is no data in existance by which anyone can ascertain whether, on the average, the speed of passenger trains in any leading country is greater than in any other leading country. The author of "Speed" has made a gratuitous guess as to the average speeds in different countries and then set down his guess, the correctness of which he cannot prove, and the incorrectness of which no one else can prove, as if it were the demonstrable gospel truth. The only existing records on the subject relate to the running time of a limited number of specific trains, and a comparison of their schedules indicates that there are more fast trains in Great Britain and some other European countries, where passenger traffic is much heavier than in the United States, than there are here, but that the fastest trains in the United States are the fastest trains in the world.

In the main, however, "Speed" is not an attack on the speed with which passenger trains are run in this country, but on the accident record of our railways.

Mr. Russell sought to show that this record is much worse than that of the railways of other countries; that this is because, to quote his own language, "the American railroad is not physically equipped for safety"; and that it is not so equipped because railway managers have issued watered capital and then, instead of spending a proper part of earnings on maintenance, have paid out these earnings as dividends on this fictitious capitalization.

It is true that the accident record of our railways is bad. But it is far from as bad as this writer paints it; and it is getting better, not worse. It is true that it is worse than the accident records of the railways of Europe. But it is nowhere near as much worse as he represents. It is true that many of our accidents are due to defects of railway plants. But it is not true that most accidents are due to them. It is true that the shortcomings of the plants of some railways are due to overcapitalization. But it is not true that the shortcomings of the plants of our railways as a whole are due to overcapitalization; for as a whole they are not overcapitalized.

RAILWAY ACCIDENTS IN THE UNITED STATES AND EUROPE.

Mr. Russell's apparent intent to deceive is illustrated by his comparisons between accidents on the railways of the United States, on the one hand, and of France and Great Britain, on the other. He shows that the numbers of passengers and employees killed are greater here in proportion to the numbers carried and employed than in France and Great Britain, and assumes that this shows the relative hazards of railway travel and employment. This assumption as to passengers is unjustified. Other things equal, the number of accidents to them will increase not merely with the number carried, but also with the average distance they are carried. Now, the average distance each passenger is carried is two to four times as great in the United States as in the various countries of Europe. Therefore, if all other conditions were the same, each passenger here would, because of the longer average journey, be exposed to two to four times as much risk as each passenger in Europe. Mr. Russell refrains from mentioning these differences in the average journey, thus giving a wholely false impression. It is not possible, as Mr. Russell assumes, to make accurate comparisons between the statistics of railway accidents in different countries, because they are kept on different bases. The last year for which complete statistics of railway accidents in any considerable number of leading countries are available is 1908. Fully recognizing that, because of the different bases on which the statistics are compiled no satisfactory comparisons between them are possible, an attempt has been made in the following tables to make the least unsatisfactory comparisons practicable:

RAILWAY ACCIDENT STATISTICS, 1908.

Accidents to Passengers.

	Killed.		Injured.	
Country.	Number.	Number per 1,000,000 passenger miles.	Number.	Number per 1,000,000 passenger miles.
United States	381	.013	11,556	.40
United States, Group II (a)	80	.011	2,677	.38
United Kingdom	102	(b)	2,525	(b)
France (c)	27	.0027	477	.05
Germany	101	.0048	548	.032
Prussia-Hesse	69	.0048	374	.03
Austria-Hungary	40	.0064	624	.10

(a) Group II includes New Jersey, Delaware, Maryland, most of New York and Pennsylvania, and part of West Virginia.
(b) Not ascertainable.
(c) Train accidents only.

Accidents to Employees.

		Killed.		Injured.	
Country.	Total railway employees.	Number.	Employees per one killed.	Number.	Employees per one injured.
United States	1,436,275	3,405	422	82,487	17
United States, Group II (a)	352,722	945	373	22,815	15
United States, trainmen only	276,785	1,842	150	35,821	8
United Kingdom (b)	(c)	382	(c)	5,140	(c)
United Kingdom (d)	275,671	256	1,077	3,935	70
France	324,592	300	1,082	634	512
Germany	695,865	599	1,162	1,474	472
Prussia-Hesse	486,575	412	1,181	851	572
Austria-Hungary	392,423	273	1,437	2,277	172

(a) Group II includes New Jersey, Delaware, Maryland, most of New York and Pennsylvania, and part of West Virginia.
(b) Including contractors' employees. Train movements only.
(c) Not ascertainable.
(d) Track and train employees only. Train movements only.

Mr. Russell says that "comparisons for a term of years seem to indicate that with the same number of passengers carried we killed ten times as many as Great Britain and thirty times as

many as France." The foregoing table shows that the number of passengers killed per one million passenger miles in the United Kingdom is not ascertainable and that in France only the deaths and injuries of passengers included in *train accidents* are reported. If we compare passengers killed only in train accidents in France and the United States—in other words, like with like—we find that there was killed in France in 1908 .0027 passenger for each million of passengers hauled one mile, while in the United States there was killed .0085 passenger for each million passengers hauled one mile. On this showing, instead of passenger travel being thirty times as dangerous in the United States as in France, as Mr. Russell implies, it is only three times as dangerous. Using the same method of comparison, we find that travel in the United States is about three times as dangerous as in Germany, and about twice as dangerous as in Austria-Hungary. This is a bad showing, but it is much better than that sought to be made by Mr. Russell. In proportion to their numbers from 2½ to 3½ times as many employees are killed in the United States as in France, Germany and Austria-Hungary.

THE CAUSES OF ACCIDENTS.

To convict our railways of having a worse accident record than the railways of other leading countries is often assumed to convict their managements of inefficiency and to show the need for stringent government regulation of their operation. Their accident record is sometimes used as an argument for government ownership. But it can be demonstrated that most of our accident record is due to conditions that railway managers do not and cannot control.

We can fix the responsibility and devise remedies for accidents only after we have traced them to their causes. As a step in that direction, let us study the following table giving the total railway accidents in the United States in the year ended June 30, 1911, as reported by the Interstate Commerce Commission:

TOTAL RAILWAY ACCIDENTS, YEAR ENDED JUNE 30, 1911.

Train accidents—	Killed.	Injured.
Passengers	356	13,433
Trespassers	5,284	5,614
Employees	3,163	46,802
Other persons	1,154	5,073
	9,957	70,922
Industrial accidents to employees	439	79,237
Totals	10,396	150,159

These are large figures. No exaggeration is necessary to make them appalling. No misrepresentation is necessary to convince any man who reads them of the necessity for the adoption of all feasible means for their reduction.

The significant column in the table is that headed "killed." An "injury" may mean the loss of a leg or merely a bruised thumb. Whether it shall be reported at all may depend on the judgment of the person making the report as to what really is an injury. On the other hand, a fatality is a constant quantity and is sure to be reported. In our analysis we shall, therefore, confine ourselves to the statistics for persons who were killed.

It will be seen that 53 *per cent. of those killed in train accidents were reported by the Interstate Commerce Commission as "trespassers."* Mr. Russell refers to this class as "unfortunate persons killed along the line," without saying how they happened to be along the line, thereby giving the impression that the railways were responsible for their deaths. As the commission says, they were persons who were stealing rides on trains or walking on railway tracks in preference to keeping to the public highways. All of them, as the designation used by the commission shows, were unlawfully intruding on the property of the railways. On the average over 14 trespassers are killed on railway property every day in the year. In European countries such trespassers are promptly arrested and fined or imprisoned, both to protect the roads and in the interest of public safety. The casualties to this class of persons in the United States are entirely due to failure on the part of our lawmakers and public officials to make and enforce similar laws; they are chargeable to inefficient government, not to inefficient railway managements. Mr. Russell is a socialist. This may explain why he so hotly denounces that part of our accident record for which he thinks the railways can be held responsible, and refers so briefly and tenderly to that large majority of fatalities for which the governments and the public are responsible.

ACCIDENTS TO PASSENGERS BUT A SMALL PART OF TOTAL.

Next to the figure for trespassers killed, the most significant one in the table is that showing that only 356, or *but 3.4 per cent.*, of the total persons killed were passengers; and this includes 32 persons carried under contract, such as mail clerks and newsboys. The railways annually carry almost 1,000,000,000 passengers an average of about 33 miles. This is equivalent to hauling every inhabitant of the country about 350 miles. The popular impression—an impression Mr. Russell fosters—is that most persons killed in railway accidents are passengers; but passengers are but a very small part of the total. Taking the figures for 1909 as a basis, Julius Kruttschnitt showed that *on the average a passenger on the railways of the United States could travel* 4,000 *times around the earth without being killed. Stating the matter in another way, he could travel sixty miles an hour for* 220 *years without a fatal accident.*

Another popular misconception is that most passengers are killed in true train accidents—that is, collisions, derailments, etc. Mr. Russell seeks to foster this idea, also, and roundly denounces our railways because they have a relatively small amount of double track and block signals, which he evidently considers essential to prevent collisions. The total number of passengers killed in collisions and derailments in 1911 was only 142, or only 1.4 per cent. of the total number of persons killed in all accidents, and but 2.6 per cent. as many as the number of trespassers killed. One hundred and thirty-one passengers were killed while getting on or off trains, locomotives or cars, or by falling from them. Thirty were killed by being struck or run over by engines or cars at stations or yards. The deaths of the rest were due to miscellaneous causes. Only 142 of the total of 356 were killed in true train accidents. These figures show that a large majority of the deaths of passengers are not due, as Mr. Russell asserts, to the fact that the "American railroad is not physically equipped for safety." For example, what improvement in their physical equipment would keep people from jumping or falling off trains, or stepping in front of them at stations? Deaths from such causes are largely due to the folly or misfortune of those killed, and not usually to physical shortcomings of the railways.

HOW EMPLOYEES ARE KILLED.

About 30 per cent. of the fatalities are suffered by employees. A computation made by Mr. Kruttschintt based on the ratio between the number of employees in service and the number killed in 1909 showed that *on the average an employee can work* 637 *years before being killed.* The hazards of railway employment, while great, are less than is commonly supposed or than Mr. Russell represents.

Furthermore, most of the fatalities to employees, as well as to passengers, are not due, as is asserted, to defects of the physical equipment of railways; nor is a large proportion of them due to collisions and derailments. The total number of employees killed in 1911 was 3,602. Of these 209 were killed while coupling and uncoupling cars, in spite of the fact that 99.3 per cent. of the locomotives and cars in service have been at heavy expense equipped with automatic couplers. One thousand, four hundred and twenty-nine were killed by being struck or run over by engines or cars, which, of course, were being operated by their fellow employees. It is impossible to see how anybody can attribute these fatalities to defective equipment; the best car or locomotive can kill an employee who gets in its way quite as easily as the poorest. One hundred and ninety-seven were killed while getting on or off cars or engines. Three hundred and ninety-one were killed by falling from trains, locomotives or cars. Part of these deaths were due to de-

fective equipment, although probably most of them were not. Seventy-eight employees were killed by coming in contact, while riding on cars, with bridges, tunnels, signal apparatus or some other fixed structures above or at the side of the track. Most of these deaths were due to the fact that, owing to the increased size of equipment and to other causes, overhead and lateral clearances between cars and structures have become too small. This is a defect in railway plants for which the railway managements are responsible and which they alone can remedy. The deaths of 439 were due to "industrial accidents" resulting from handling of tools, machinery, supplies, etc., getting on or off locomotives or cars while at rest, and from other causes *not connected with the movement of trains,* and therefore no more chargeable to hazards of transportation than an accident happening on a farm or in a mill.

The foregoing figures account for over 70 per cent. of the fatalities to employees. The total number of deaths of employees from collisions and derailments, from trains, locomotives or cars breaking down, etc.—in other words, from true train accidents—was 633, or but 17 per cent. of the total. Even all of this 17 per cent. cannot be charged against defective equipment or rules of operation. Many of them were due to reckless violations of the regulations adopted by the companies to promote safety. Innumerable instances could be cited where, for example, collisions resulted from locomotive engineers disregarding signals that were set against them, or disobeying orders to run at low speed over track that had been made soft by heavy rains, or to wait at specified stations to meet other trains. One of the most famous trains in the country—a train running entirely on double track on every mile of which there are modern block signals—recently was wrecked with disastrous results because the engineer failed to obey written orders to proceed slowly over a piece of weak track that was being strengthened as rapidly as men and money could do it.

Even those who are thoroughly familiar with what takes place daily on our railways find it hard to believe the facts about the foolhardy conduct of employees that sometimes causes many accidents. A train recently was wrecked by striking a bull. The engineer's story was that he saw the animal beside the roadway; that it started to run off, and then, just as the engine got almost opposite to it, turned and dashed upon the track. Investigation disclosed that the engineer, who was nearing the end of his run, desiring to clean up before reaching his destination, had got down from his seat, leaving his engine to run wild, and was washing his face and hands in a bucket of water on the floor of the cab when the bull was struck! He never saw it until the engine and cars had rolled into the ditch and he was pulled from the debris. It might seem that employees would appreciate more than any other persons the need for implicitly obeying signals. Yet, even on roads having the most perfect automatic signals that the ingenuity of man has invented and money can purchase, it is necessary to make constant tests by setting false signals, and to administer discipline when they are disregarded, to insure that the indications are being, and will be, obeyed.

THE PRINCIPAL CAUSE OF ACCIDENTS.

Herein is to be found the cause of most accidents on the railways of the United States. We get a sidelight on the true situation when we consider certain conditions in the United States for which the governments and the public itself are responsible. The primary duty of every government is to protect each citizen from the violence of his fellows. Statistics collected by the Chicago *Tribune* show that in the year 1910 no less than 8,975 people died by homicide in the United States. This is nearly three times the total number of passengers and employees killed in railway accidents in that year, this number being but 3,804. Our record in this respect is the worst in the civilized world, except perhaps in Italy. This is because we have so many people who are willing to "take a chance" with the law and because our laws are notoriously so badly enforced. The great majority of railway accidents are due to similar causes. We have seen that 53 per cent. of those killed on railways are unlawful trespassers on their property, and that this wholesale trespassing and resulting slaughter continues because the governments will not enforce the laws. Similarly, the great majority of the remaining fatalities, and of injuries, take place because many employees manifest, by "taking chances," by violating the rules which the companies have adopted to make operation safe, the same tendencies so conspicuously displayed by many of their fellow citizens in other walks of life, and then strenuously, and often successfully, resist, with the backing of their unions, the administration of the discipline enforcement of which is the prime requisite to a substantial reduction of accidents.

As W. M. Acworth recently said:

> "It has to be borne in mind, moreover, that the American railways are operated by over fifteen hundred thousand employees—average men—and an average man is after all only an average man. And when it comes to dealing with these average men, discipline in this country is attended by difficulties that do not exist in England. In England or on the Continent the railway employee usually spends his entire working life in the service of one company, and to lose his job is a disaster. In the United States men work for various railway companies in succession. When they overstep the bounds the final recourse is to 'fire' them—and they cannot always be 'fired' because of the trades unions; and even when a man is dismissed he does not care a continental, because all he has to do is to go around the corner and get another job."

It is not meant to assert that all employees are reckless and disobedient any more than it is meant to assert that all the people of the United States are lawless. It is meant only to say that, as the large number of homicides in this country is due to the fact that we have many lawless people of whom the rest of the public are the victims, so there are many railway employees who are careless or reckless of whom the public and employees themselves are the victims.

The author of "Speed" shows he is aware many accidents are due to failure of employees to comply with the rules and regulations of the companies, but, seemingly anxious to put on the companies the entire onus, he tries to show these failures of the human element occur because the managements make requirements too rigorous for human nature always to meet. He implies that trainmen are constantly forced to get trains over the road so fast that they cannot also conform to the code of train rules and obey all signals. There are no doubt cases where this is true, but they are exceptional. If they had been common they long since would have been the subject of vigorous and persistent protests from the railway labor brotherhoods. Mr. Russell's general assertions on this subject can no more be substantiated than certain specific statements that he makes about it. For example, he says many accidents occur because employees are worked excessive hours, and adds that the "new and feeble hours of service law does no more than limit continuous employment to sixteen hours." When the hours of service act was under consideration by Congress, those who charged that the working of trainmen excessive hours caused numerous accidents repeatedly were challenged to produce specific instances and could cite hardly any. Nevertheless, the hours of service law was passed, and, contrary to Mr. Russell's statement, it not only limits the time trainmen may work to sixteen consecutive hours, but *limits that which telegraph operators and despatchers may work to nine consecutive hours.* That no one may think, because the law permits trainmen to be on duty sixteen hours, that they are commonly worked this long, it should be said that ten hours, or a run of 100 miles, is the trainmen's normal day; and that for all additional service the roads have to pay them for overtime. Therefore, every effort is made to keep their working day down to ten hours. Many trainmen work much fewer hours than this.

AUTOMATIC STOPS.

The author of "Speed" thinks that what is most needed to eliminate accidents is some means of bringing trains automatically to a stop when danger is present. But such a device would only prevent collisions, and, as I have shown, ac-

cidents due to collisions are a very small part of the total. He asserts that an "automatic safety device" long ago eliminated collisions in New Zealand, and that the same device is in use on the railways of England. This statement completely discloses his ignorance, for there are no automatic stops in use in England except on the underground railways of London. Automatic stops also are used in the subways in New York, but experience has not shown that these devices, which are used on electric roads, will stand the test of service on steam roads operating under exposure to varying and severe weather conditions. Cab signals are used on just two railways in England, the Northeastern and the Great Western, and these are the "automatic safety devices" to which Mr. Russell evidently was referring, but the character of which he entirely misunderstood. Cab signals are not "automatic safety devices," because they simply signal the engineer in the cab and do not bring the train to a stop.

Mr. Russell makes sweeping statements regarding the use of automatic stops in other countries, but in view of the fatal error regarding their use on English railways into which he fell it is evident that his statements are entirely untrustworthy. Experiments have been carried on for six years on the government-owned railways of Germany looking to the selection of the most practical and suitable device for preventing the overrunning of stop signals by enginemen, but the results gained have been no more satisfactory than those reached by similar experiments in England and the United States, and automatic stops have not been favored at all. The German Railroad Union, a quasi-official body, has voted that the desideratum is an indication in the cab to warn the engineman.

Since only a relatively small number of railway accidents would be prevented even by an automatic stop which worked with absolute perfection, it is evident that some other means for stopping railway accidents is much more needed. The views of the Block Signal and Train Control Board of the Interstate Commerce Commission, which has been investigating this subject for several years, were expressed in its annual report for 1910. It said that "outside the army and navy the American is not reared with that discipline which becomes a part of the man and governs his actions mechanically. . . . This conclusion is brought home all the more convincingly when one reflects that *nowhere in the world have appliances for safeguarding railway transportation been so highly developed as in this country,* notwithstanding which nowhere in the world is there a greater proportionate number of accidents of the kind which such advance in the art should prevent." It adds that *"what is most needed is automatic performance of one's duties rather than automatic mechanical devices."*

DEATHS AT GRADE CROSSINGS.

Mr. Russell dwells at great length on the number of deaths that result from people being struck by trains at highway crossings. The total number thus killed in 1911 was 992, of whom 124 are described by the Interstate Commerce Commission as trespassers. The author of "Speed" implies that deliberately faulty original construction of our railways and a diabolical preference on the part of railway managers for killing people rather than for spending the comparatively small sum which he implies would be necessary to eliminate grade crossings are entirely to blame for the numerous grade crossing fatalities. Now, it is unquestionably true that, in parts of the country where population, and the traffic on highways and on the railways crossing them, are considerable, crossings at grade are a great menace to safety and ought to be abolished just as fast as may be practicable, and the construction of new crossings at grade should ordinarily be prohibited. The city and state governments are justified in legislating to compel their elimination, provided they give due consideration to the fact that the railways must, directly or indirectly, get from earnings the wherewithal to pay their part of the cost of such improvements. But the implication that the railways have deliberately laid their tracks over all the streets and highways that they now cross and that, therefore, they are entirely to blame for grade crossing accidents, is false. In thousands of cases, both in cities and rural districts, the railways were built first and the highways and streets were opened across them. Mr. Russell especially refers to the numerous grade crossings in Chicago and to the municipal legislation to require their abolition. The situation in Chicago illustrates conditions in cities throughout the country, and shows the facts to be very different from what Mr. Russell seeks to make appear. In a great majority of cases the streets of Chicago were built across the railways, not the railways across the streets. The author of "Speed" asserts that, and expresses astonishment because, the cost of track elevation in Chicago "is shared between the municipality and the railway." The facts, as supplied to me by the track elevation department of the city of Chicago, are that up to the present time the railways have spent $66,000,000 on track elevation, while the total cost to the city—including all land damages it has had to pay, the salaries of its track elevation expert, and of the engineers employed to pass on the plans submitted by the railways, and all other expenses incurred by it—has been only $600,000, or less than 1 per cent. as much as the cost to the railways! These facts show just how reliable a chronicler Mr. Russell is. They also illustrate how enormously expensive track elevation is. Before the railways complete it in Chicago it will have cost them over $150,000,000.

Mr. Russell adds: "In the final analysis, of course, the difference (whether the railway or public pay for track elevation) is nothing, because the companies invariably make the public pay for all improvements, recouping the expenditures through increased charges or curtailed service." Now, the fact is that railway rates to and from Chicago are lower on the average and more and better service is now rendered than before track elevation was begun.

While the facts are not as Mr. Russell states them, probably they ought to be. Is it equitable to require the railways to bear all, or practically all, the expense of separating crossings at grade with highways, when most of the highways have been opened across the railways? In some states the cost is divided between the railways and the public; in one state, for example, the railway pays one-half, the state one-fourth, and the community immediately affected one-fourth. Will any one contend that railway stockholders should be required to spend money for this, or any other kind of improvements, that are of public benefit, and then should be denied any return on the expenditure—in other words, should be forced to turn philanthropists? Such a suggestion is preposterous. Everyone knows that the money for improvements could not be raised on such terms. But if any return is to be earned on improvements it must be derived from the rates charged; and what community may more justly be required to pay it through its rates than the community for whose benefit an improvement is made? Track elevation in Chicago, for example, has been partly of benefit to the railways, because it has tended to reduce their cost of operation, but of still more benefit to the people of Chicago; and since Chicago is making the roads pay for it, as a matter of equity to the railways and to the other communities they serve, why should its people not pay in the rates charged in and out of it for the benefits received by them?

The author of "Speed" implies that the highway crossing accident is peculiar to the United States. As a matter of fact, in Great Britain, where the mileage of railways is about one-tenth of what it is in the United States, the number of persons killed on grade crossings in 1910 was 75, which is more than one-thirteenth of the number killed on highway crossings in the United States in 1911.

Mr. Russell not only misrepresents the causes of accidents, but asserts the record of our railways in this respect is growing worse. Now, Mr. Kruttschnitt has shown that in 1889 the passengers killed per 100,000,000 passengers carried one mile

were 2.68; in 1899, 1.64; and in 1909, but 0.86. The number of fatalities to passengers was only a little more than one-half as great in proportion in 1909 as in 1899, and less than one-third as great in proportion as in 1889. The number of employees killed per 1,000 employed in 1889 was 2.80; in 1899, 2.38; and in 1909, 1.57, a decline of 34 per cent. in 1909 as compared with 1899, and of 44 per cent. as compared with 1889. *As Mr. Kruttschnitt has pointed out, at the rate at which employees were being killed in* 1889 *an employee could, on the average work* 357 *years without a fatal accident; in* 1899, 420 *years; and in* 1909, 637 *years.* If we compare period with period instead of year with year we get even more favorable results. The last accident bulletin of the Interstate Commerce Commission gives statistics for the eight years, 1904-1911, inclusive. During the four years ending with 1907 the number of passengers killed was 2,022, and during the four years ending with 1911 it was but 1,513, a reduction of 25 per cent. Similarly, in the former period the number of employees killed was 16,810, and in the latter period, it was but 13,875, a reduction of 18 per cent.

We have now seen that the accident record of the railways of the United States is nowhere near as bad, compared with that of the railways of other countries, as Mr. Russell sought to show; that most accidents are not due to the defective equipment of American railways, as he sought to show; and that, contrary to his assertion, accidents to passengers and employees are not increasing, but decreasing, both in proportion to the number employed and the traffic handled, and absolutely.

THE PHYSICAL CONDITION OF AMERICAN RAILWAYS.

No railway man or other person who knows the facts and wishes the public to know them would, however, deny the truth of Mr. Russell's charge that American railways are not in as good physical condition as they ought to be in the interest of the public welfare generally, and particularly in the interest of public safety, and that many accidents are due to their comparatively defective physical condition. It is true, as he says, that most European railways have double track, while most of the railways of the United States have only single track, and in many cases are handling on single track an amount of traffic which makes operation unsafe. His statement is incorrect that even where there are block signals they are mere makeshifts. The signal systems on numerous American railways, and particularly the automatic block signals in use on a mileage of about 20,000 miles of line, are among the best block signals in the world. It is true, on the other hand, that only 71,000 miles out of a total of about 240,000 miles were on January 1, 1910, equipped with signal systems and that safety requires the installation of many thousands of miles more signals if, indeed, it does not demand the signaling of our entire mileage. His assertion that, "We have dirt ballasted roadbeds where the ballast should be of stone; we have wooden bridges instead of steel; we have temporary culverts instead of culverts in solid masonry; we have cheap, narrow and inadequate cuttings, wooden trestles, dirt fillings, soft ties," is, in the sweeping terms in which it is made, wholly misleading. The better railways of the United States are the best railways in the world. It is true, on the other hand, that a large—in fact, the greater—part of our mileage is the skeleton of what it should be, to render as economical, efficient, and safe service as the public welfare demands.

In comparing the construction of our railways with that of European railways, however, Mr. Russell falls into some absurd errors. For example, his statement that British lines "use light rails for smooth running," is nonsense. Any engineer could have told him that, other things equal, trains run less smoothly on light than on heavy rails. The reason the British roads have light rails is that they have light equipment, and that therefore the weight on each car and locomotive axle is small. The use of the light British rails under the heavy American equipment would cause rail breakages, spreading of tracks and consequent wrecks.

Before the managements of American railways are condemned for not having constructed and equipped their lines to the highest standards, the conditions under which they have been built and developed should be considered. The railways of Europe were from the first constructed in countries that already were densely populated and in a high state of agricultural and industrial advancement. They were sure of a large traffic from the start. Most of the railways of the United States were built through territory having a sparse population and little agricultural and industrial development. They were constructed to attract population and build up industry and traffic, not to handle a large traffic already available. It was necessary to build them cheaply if they were to be built at all—just as it was necessary for the farmer to build his house and barn cheaply. How many miles would there have been built in Kansas in the days of sod houses if railways had been required at that time to construct with double track, 90-lb. rail, stone ballast, automatic signals and no grade crossings? Even as inexpensively as they were constructed, the traffic for them was so light that many were unable to earn a return on their comparatively small investment and became bankrupt. Even as yet their earnings are much smaller than those of the railways of Europe. The gross and net earnings per mile of the railways of certain European countries in 1908, and of the railways of the United States in 1909, were as follows: United Kingdom, gross, $25,163, net, $9,127; Germany, gross, $18,210, net, $4,816; France, gross, $13,033, net, $5,641; Switzerland, gross, $14,275, net, $4,672; United States, gross, $10,356, net, $3,505. Owing to the conditions under which they have been built and developed, it has not been possible to spend as much per mile on our railways as on those of Europe. The capitalization per mile of the railways of Switzerland, according to the latest available statistics, is $110,740; of France, $139,237; of Germany, $109,788; of the United Kingdom, $275,040; and of the United States, $59,259. The foregoing figures ought to be enough to explain why many of the railways of the United States are not as well equipped for safety as are many of the railways of Europe. It has not been possible to spend enough money on them to make them as safe as they ought to be, and it has not been possible to do so because it has not been possible to earn enough to make the needful improvements from earnings, or to pay a return on it even if it could have been raised by the sale of stock and bonds. And it might be added, parenthetically, that the prevalent policy of regulation, which aims narrowly to restrict the earnings of railways, is admirably adapted to continuing to render it impossible to raise the funds requisite to make them safe. When the people of the United States so furnish business to the railways and so regulate them as to enable them to increase their investment and earnings until they shall equal those of the railways of Europe there will be more justice in criticising them for not being as perfectly equipped as is desirable.

Mr. Russell gives a very different explanation of the failure to make the improvements needful for safety. He asserts that in other countries the railways are maintained out of their earnings, while in this country constantly increasing quantities of securities are being poured forth, ostensibly to make improvements, but really to serve as pawns in the game of Wall Street, "or as melons for the plain and unadorned purpose of making profits for the gentlemen on the inside." He says, "When, by the increase of capitalization, these interest and dividend charges threaten to become more than the earning capacity of the road will normally provide for, there must be either an increase in the earnings through increased rates or a decrease of expenses. . . . Now, this is exactly what is happening all over the United States to an extent we little dream of; to an extent that means in plain terms the physical bankruptcy of the American railway system."

This certainly is as complete a misstatement of facts as ever was penned. W. M. Acworth is the greatest authority on railway affairs in England, and one of the greatest in the world. Regarding the source from which improvements have been made in the railways of the United Kingdom and the United States, he said in an article in the *North American Review* for March, 1910:

"*The recognized American principle* has been so far as possible to charge to capital *only such additions as increase the earning power of the property.* I should define the corresponding English principle as being to *charge to capital all actual additions to the property, regardless of the fact whether they are income-earning or not.*"

This is exactly the opposite to the assertion which was made by Mr. Russell.

ARE THE RAILWAYS RECKLESSLY FINANCED?

It is true that some of the railways of the United States have been, and are, excessively capitalized; but owing to the conservative policy that has prevailed on most roads for many years, of making extensive improvements from earnings, and to other causes, it may be said with more truth that the railways of the United States, as a whole, are under-capitalized than that they are over-capitalized. It is well known that within recent years large increases have taken place in the value of their real estate. It is also well known that many have made extensive reductions of grades and rectifications of curvature, have built expensive stations and terminals, ballasted and tie-plated their tracks, laid heavier rails and better ties, constructed stronger and more durable bridges, installed interlocking and signaling systems, replaced wooden structures by structures made of cement, masonry and steel, etc. Besides all this, during the ten years from 1899 to 1909 the number of freight cars per 1,000 miles increased 27.5 per cent., the number of passenger cars 12 per cent., and the number of locomotives 24 per cent. Furthermore, the equipment added, and that with which old equipment was replaced, was of much greater capacity and much more expensive than that superseded. Meantime the mileage of additional main tracks and sidings per 100 miles increased 36 per cent. The density of passenger traffic per mile increased 64 per cent., and the density of freight traffic increased 45 per cent. The assessors evinced their belief that there was a large increase in the value of railway property by advancing taxes per mile from $245 to $401, or 64 per cent. Yet between 1899 and 1909 the railway stocks and bonds outstanding in the hands of the public increased only from $47,438 to $59,259 per mile, or but 25 per cent. In the two states of Minnesota and Washington, where the most thorough recent valuations of railways have been made, the railway commissions found that the cost of reproduction of the physical properties of the roads would exceed the part of their capitalizations assignable to the mileage in those states; and Judge Sanborn held in his decision in the famous Minnesota rate case that the valuation made by the Minnesota commission was too low. As I have already shown, the capitalization per mile of our railways is less than that of the leading countries of Europe; and, indeed, it is less than the capitalization per mile of the railways of any first rate country on earth. There was a time when the railways of the United States as a whole probably were over-capitalized; but any person who takes the pains to examine the facts will be convinced that as a whole their financing for the past fifteen or twenty years has been conservative, the actual cash investment in the properties having largely exceeded the increase in the amount of stocks and bonds outstanding.

A PROBLEM FOR MANAGEMENTS, EMPLOYEES AND PUBLIC.

It has not been meant to try by the foregoing to give the impression that the managements of the railways of the United States are not at all at fault, or are even only slightly at fault, for railway accidents. On the contrary, it is incontrovertible that many managements have not done all that the public could reasonably demand and expect of them to promote safety. A good deal of money has been spent by the railways in other ways which would better have been spent to strengthen track, buy better equipment and install block signals. They have not been entirely consistent in adopting rules for the promotion of safety, and they have often been wanting in courage and perseverance in enforcing good rules which have been adopted. While it is not true, as asserted by Mr. Russell, that the railways as a whole are overcapitalized, that they take earnings which should be applied to the maintenance of the properties and use them to pay dividends on watered stock, and that the resulting bad physical condition of the properties is the cause of accidents, it is true that some railways have been overcapitalized, that they have taken earnings which ought to have been used to maintain the properties and paid them out as dividends on watered securities, and that in consequence of the resulting physical defects of their properties they do have accidents. But the facts show that most railways apparently have done as well as or better than other concerns in this country in the management of their affairs; that many have done about as well as they could, considering the conditions, to keep down and reduce accidents; and that, even if they have not, such a great majority of accidents is due to causes not connected with the physical condition of railway plants at all, that the problem of reducing accidents is one the solution of which requires the earnest co-operation of railway managements, of railway employees, and of the people individually and through the state and national governments.

To say anything else is to misrepresent the facts regarding American railways, and those who misrepresent the facts regarding American railways prompt and stimulate unjust attacks on them by the public through railway commissions and legislatures—attacks which, in their immediate effects are harmful to the railways, but which, in the long run, are even more harmful to the public itself. The railway managers have been at fault in not promptly refuting the many misrepresentations regarding railway accidents and other matters that have been so generally made and widely disseminated. But certainly the blame that should be visited on their failure fully to present the truth regarding the railways to the public is less censurable than the malicious and mercenary activity that has been displayed by many persons and publications in getting before the public the opposite of the truth. The certain effect of misrepresenting the facts is to help postpone the solution of the various problems connected with railway operation and regulation in this country; and the man who helps do that is a public enemy.

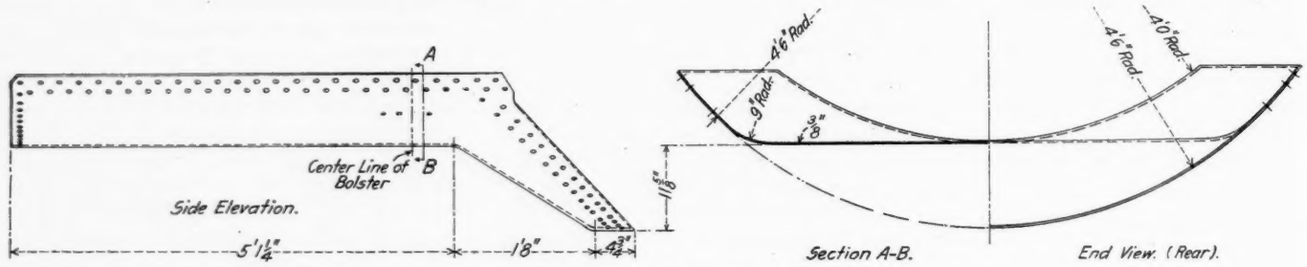
The *Revue Générale des Chemins de Fer,* in an article on The Railways of Brazil, tells how the railways have emerged from the era of only building lines to connect two or more thickly populated localities. The new lines precede civilization and penetrate sparsely inhabited districts. The government requires colonization clauses with the purpose of making the country more productive and of hastening its development. Land is bought along the right of way, by the railway companies, which are required to start the cultivation. They must also supply the colonists with implements, give them work on the railways, where practicable, and sell them homes under certain specified conditions. One railway receives government subsidies as follows: For every inhabited house, $200; for every family which has been in residence for six months, $100; for every family which has been in residence for one year, $200; for every group of 50 lots which have been inhabited for two years and of which the inhabitants have obtained full ownership, $5,000. There must be 160 lots for every 100 miles of line, and at least one demonstration depot for every 180 miles. The Sao Paulo & Rio Grande has a colony at Campo, where it sells lots to colonists at the rate of $60 an acre, builds houses, furnishes live stock, seed and farming machines; all payable in 12 semi-annual instalments.

LARGE CAPACITY TANK CAR.

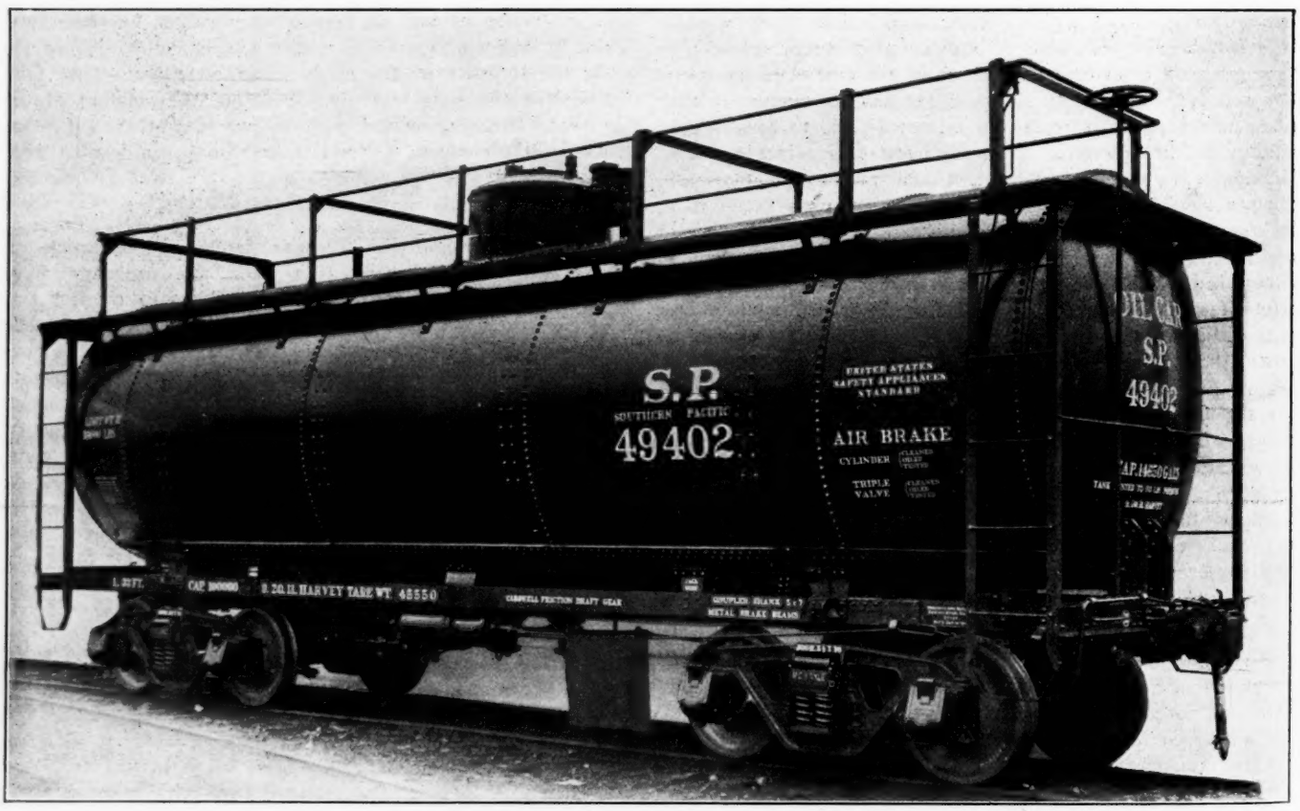
A new tank car 9 ft. in diameter and 33 ft. long, having a capacity of 14,650 gal., was recently exhibited at the Twelfth Street station, Chicago, of the Illinois Central, by the Chicago Steel Car Company, Chicago. It will be placed in service on all the lines of the Harriman system for test, inspection and criticism. The capacity for 113,550 lbs. of oil is 72 per cent. of the total weight (159,100 lbs.) of the car loaded to its full capacity. The largest car of this type built heretofore had a tank 8 ft. in diameter and 33 ft. long, with a capacity of 12,000 gal., while the ordinary standard tank car is 7 ft. in diameter with a capacity of 10,000 gal. Tank cars of this new design have reached the same limit as coal or ore cars, and the same advantages of the concentration of large volume in one unit may be expected from them.

The center of gravity of the car is 7 ft. from the top of the rail, which is lower than that of many of the old 8,000 gal. tank cars. This is accomplished by placing the bottom of the 9-ft. tank only 2 ft. 7⅝ in. from the top of the rail, with an offset in the bottom sheet at each end to allow the bolster draft sills and coupler to occupy the normal standard height. The bottom sheet is ⅝ in. thick, and is carried forward as a portion of the cylinder to its connection with the cast steel body bolster, to which it is secured with three rows of rivets. A ⅜ in. conical gusset sheet is connected to the 9 ft. cylinder back of the bolster and extends forward to the end of the tank, which is 8 ft. in diameter. The top line of the tank is horizontal. The gusset sheet forms a portion of the oil tank proper, but the connection of the ⅝ in. bottom sheet to the steel bolster is open and any working of the rivets at this point will not cause leakage.

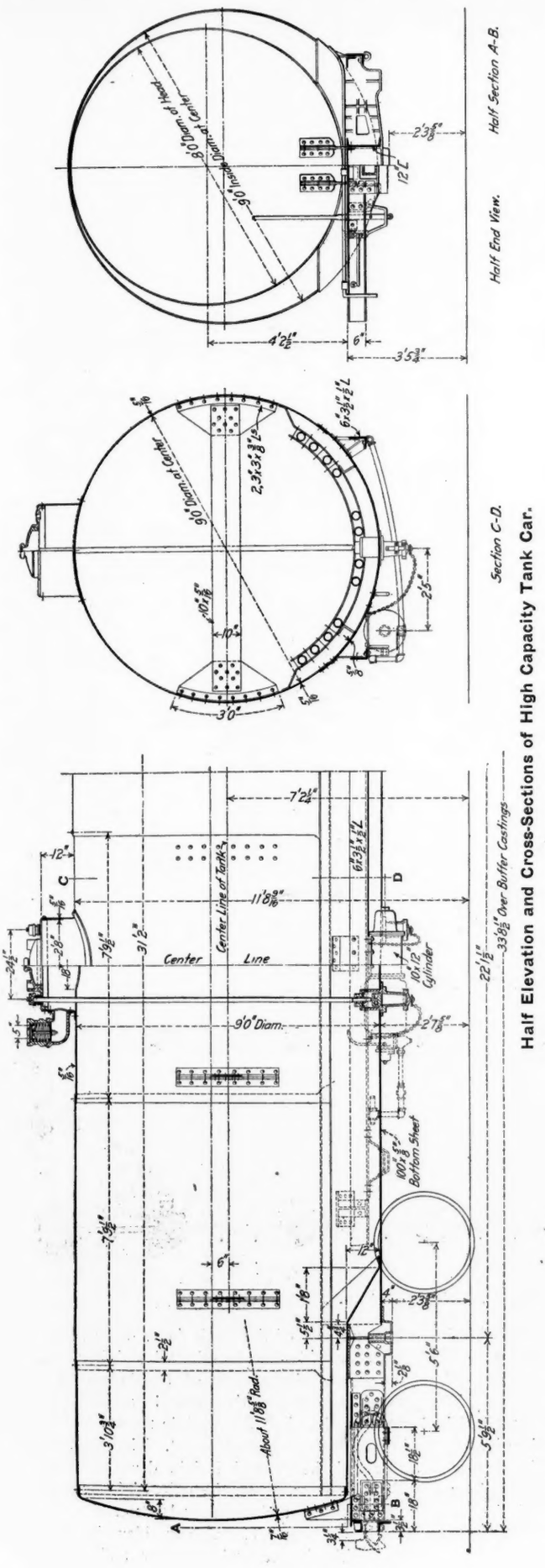
The tank has a bursting pressure of 240 lbs. per sq. in., and was tested to 60 lbs. per sq. in. Four splash plates, 10 in. x 5/16 in., are placed on the longitudinal center line of the car. These also act as lateral braces in holding the large tank in shape. The area of the bottom ⅝ in. plate in resisting buffing is 62½ sq. in. The draft sills are 12 in. steel channels heavily riveted to the body bolster; they are connected to the tank at the front by two large plate brackets. The friction draft gear is the Cardwell heavy type. The trucks were supplied by the American Steel Foundries Company, and have M. C. B. 50-ton axles and Griffin wheels weighing 825 lbs. each. The side sills are heavy angles, 6 in. x 3½ in. x ½ in., and the end sill is braced by diagonal angles 4 in. x 3 in. x ⅜ in. extending to the ends of the body bolster. A cast steel push pocket is riveted to the side sill at the body bolster and a jacking bracket is secured to the same sill at the rear of the truck. These two features are new in design and location.



Gusset Connection for Tank Car.

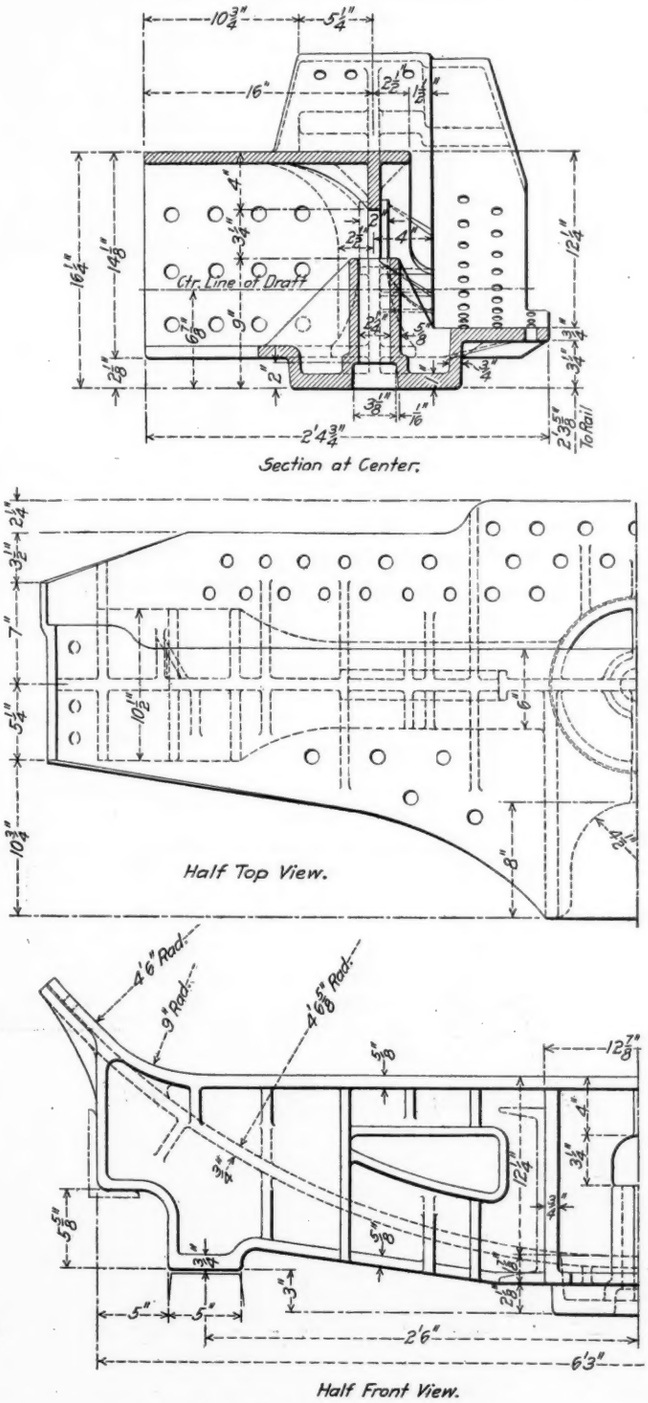


Experimental Tank Car of 14,650 Gal. Capacity.



Half Elevation and Cross-Sections of High Capacity Tank Car.

The arrangement of the running boards and ladders is shown clearly in the illustration. The running board is a 2 in. x 12 in. plank, and is supported at the corners of the car by the angle iron ladders. The side boards are supported by bar iron brackets riveted to the tank. The hand-rail is also supported by steel



Details of Tank Car Body Bolster.

angles, and the whole structure provides for safe passage over the car and is unusually convenient and substantial. The car was designed by H. C. Priebe, and built by the Chicago Steel Car Company at Harvey, Ill.

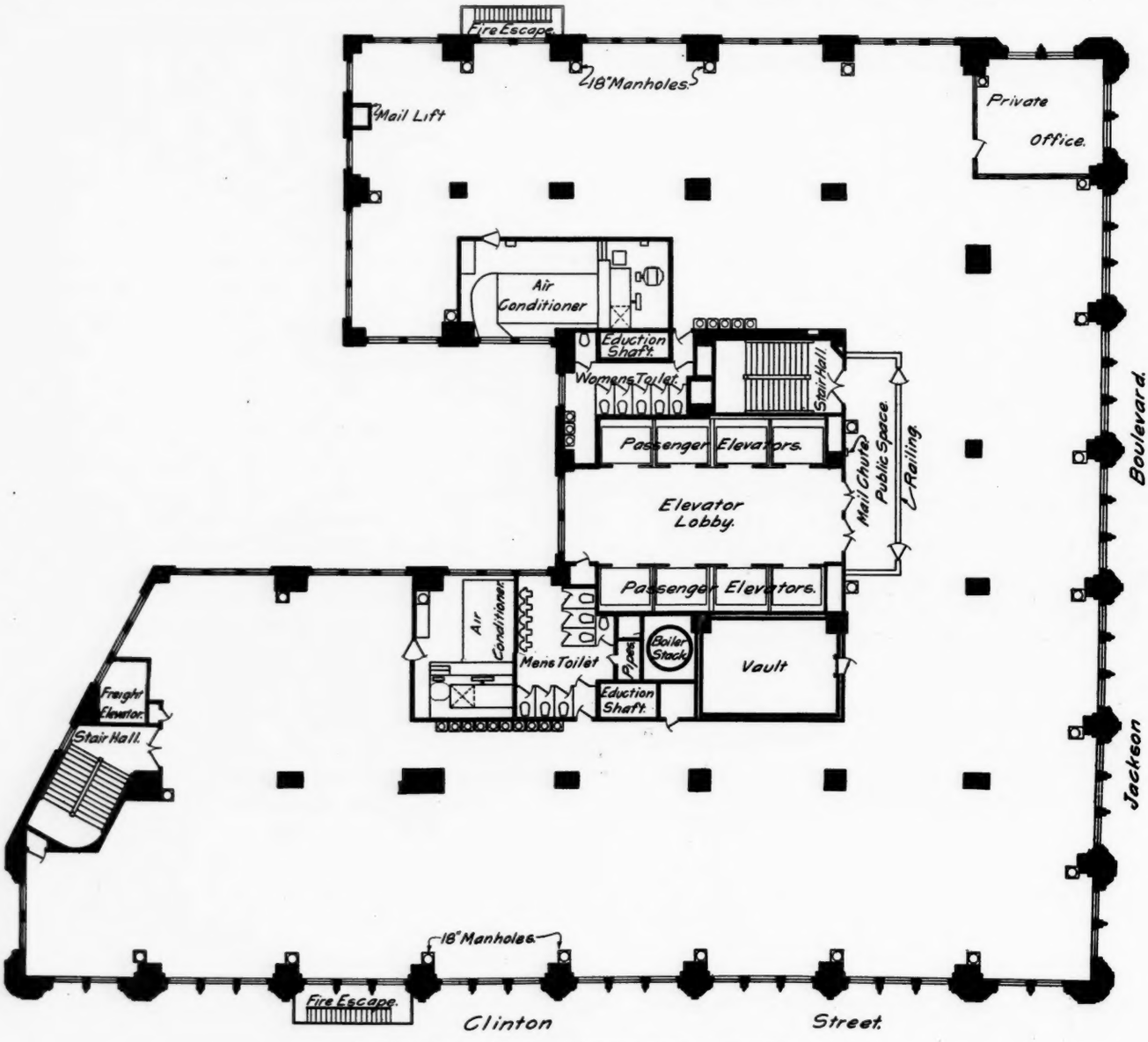
A report of the inspector general of the state railways of Chile shows that during the first quarter of 1911 there were 1,487 miles of railways in course of construction under the direction of the department of public works.

THE BURLINGTON'S NEW GENERAL OFFICE BUILDING.

Work is now well under way on the construction of the new general office building of the Chicago, Burlington & Quincy at Jackson boulevard and Clinton street, Chicago. This building will have a frontage of 150 ft. on Jackson boulevard and 175 ft. on Clinton street. It will be 15 stories in height, with provision for additional stories to be added later as required, and will probably be the largest building devoted exclusively to railway offices in the country. It will be of the latest type of construction and thoroughly modern in every respect. It will be entirely fireproof and special attention has been given to the subject of floor protection. Wooden floors will be omitted and cement and tile substituted, with a covering of linoleum where the use requires a resilient wearing surface.

The building is Gothic in design and is executed in glazed enameled terra cotta. It will be lighted on four sides and will vary from the current practice in that all four sides will show a finished exterior.

All the office space throughout the 15 floors and basement will be equipped with forced ventilation. Fresh air washed and heated will be introduced through hollow floor systems and vertical ducts, while the hollow floor system will also carry the foul air from these floors through fans, discharging the air to the roof. This is the first time ventilation of this kind has been attempted in a building of this size. Eight passenger elevators and a freight elevator will be provided, while pneumatic tubes will connect the various floors. The accompanying floor plan shows the general arrangement of the floors, additions being made to suit the local requirements. The ticket offices and display of the industrial department will be located on the first floor, together with the offices of the real estate and industrial agent, tax agent and telegraph department. The offices of the treasurer, cashier, paymaster, secretary, special agent and relief department will be located on the second floor; the offices of the auditor of ticket accounts will be on the third floor, while the fourth floor is allotted for use of the car accountant. The auditor of expenditures will occupy the fifth floor and part of the sixth floor, while the rest of the sixth floor, together with the seventh and eighth floors, will be devoted to the use of the auditor of freight accounts and claims. The general auditor and the general passenger department will be located on the ninth floor, while the tenth floor will be given up to the use of the law department. The vice-president in charge of traffic and the general freight department will be located on the eleventh floor, while the offices of the chairman of the board and president and a general meeting room will be located on the twelfth floor. The vice-president in charge of operation, together with the general manager and the super-



Typical Floor Plan; Burlington Office Building.

intendent of transportation, will have offices on the thirteenth floor. The purchasing agent, general storekeeper and chief engineer will have offices on the fourteenth floor, while the telephone office will also be on the same floor. The superintendent of motive power will have offices on the fifteenth floor, while the

New Burlington General Office Building, Chicago.

balance of this floor will be divided between the engineering and motive power departments. It is expected that this building will be completed early next fall, and that it will be in service before the first of January, 1913. It was designed and is being erected under the supervision of Marshall & Fox, architects, Chicago.

TESTS OF SUPERHEATER FREIGHT ENGINES ON THE CHICAGO & NORTH WESTERN.

The use of the Schmidt superheater on Chicago & North Western passenger engines has proved so satisfactory that it has been applied to freight engines and they are now being equipped at the rate of about 40 per month. Last March tests were made on consolidation locomotives with and without this type of superheater. They were made on the Iowa division between Belle Plaine, Ia., and Boone, a distance of about 85 miles. Four engines were tested on extra trains running at a speed of about 16 to 18 miles per hour. Three tests were made with each engine in each direction and the averages of these tests are shown in the accompanying table, together with the general averages for the two superheater and the two non-superheater engines. Both engines were of exactly the same class, being rated as class *Z* in the company's classification, the only differences being in the superheater. The general dimensions and chief differences are shown in the following table:

	Non-superheater	Superheater
Total weight of engine	235,000 lbs.	238,000 lbs.
Weight on drivers	207,000 lbs.	209,500 lbs.
Tractive effort	47,500 lbs.	47,500 lbs.
Boiler pressure	170 lbs.	170 lbs.
Cylinders	25 in. x 32 in.	25 in. x 32 in.
Diameter of driver	61 in.	61 in.
Grate area	53 sq. ft.	53 sq. ft.
Tubes, number and diameter	436—2 in.	261—2 in. 36—5¾ in.
Tubes, length	15 ft. 2 in.	15 ft. 2 in.
Heating surface, tubes	3,443 sq. ft.	2,825 sq. ft.
Heating surface, arch tubes	28 sq. ft.	28 sq. ft.
Heating surface, firebox	186 sq. ft.	186 sq. ft.
Heating surface, total	3,657 sq. ft.	3,039 sq. ft.
Heating surface, superheating	.....	610 sq. ft.
Heating surface, total equivalent*	.....	3,954 sq. ft.

*Total equivalent heating surface equals total heating surface plus 1½ the superheating surface.

It will be noticed that the heating surface of the superheater is somewhat larger than that of the non-superheater engine when considering its total equivalent value, thus practically increasing the boiler capacity of the superheater engine. The profile of the division has a gradual rise from Belle Plaine to Boone for more than one-half of the distance and there are a few short grades of not more than .7 per cent. A dynamometer car was used in the tests and the coal and water were measured as carefully as possible. The dynamometer records were used in figuring the horse power. Thus only the measure of the useful work in hauling the train was considered, and the resistance of the engine as well as that of the head wind was neglected. The coal and water, on the other hand, include both the engine and train resistance; therefore the results given are somewhat higher than those where the cylinder power is considered.

Although the saving for the superheater in ton miles per lb. of coal is shown to be 31.92 per cent., an analysis of the results

TESTS OF SUPERHEATER AND NON-SUPERHEATER CONSOLIDATION LOCOMOTIVES ON THE CHICAGO & NORTH WESTERN.

	Boone to Belle Plaine.							Belle Plaine to Boone.						
	Superheater.			Non-Superheater.			Per Cent. Saving for Superheater.	Superheater.			Non-Superheater.			Per Cent. Saving for Superheater.
	Engine.			Engine.				Engine.			Engine.			
	1795.	1797.	Average.	1727.	1731.	Average.		1795.	1797.	Average.	1727.	1731.	Average.	
Time elapsed, hrs.	6.10	6.44	6.27	8.14	6.31	7.22	.....	6.49	6.72	6.60	7.16	7.11	7.13	.....
Time running, hrs.	4.63	4.76	4.70	5.41	5.11	5.26	.....	5.04	5.49	5.27	5.66	5.63	5.64	.....
Time stopped, hrs.	1.07	1.68	1.37	2.72	1.20	1.96	.....	1.45	1.23	1.34	1.50	1.49	1.49	.....
Av. temperature of atmosphere.	41.6	45.3	43.4	51.47	56.14	53.80	.....	41	49	44.5	51.6	62.6	57.1	.....
Number of cars in train.	53	66	59	62-63	65	63-64	.....	78	71	74*	78	80	79*	.....
								42	45	43†	38	50	44†	.....
Tonnage	1,730.6	1,568.0	1,649.3	1,636.5	1,814.5	1,725.5	.....	2,953.3	3,024	2,988.7*	2,839.1	2,901	2,870*	....
								1,629.7	1,652.6	1,641.1†	1,533	1,660	1,596†	.....
Mileage	85.53	85.72	85.62	86.37	85.93	86.15	.....	15.77	15.73	15.75*	15.36	15.63	15.49*	.....
								69.75	69.59	69.67†	69.61	69.90	69.76†	.....
Coal used, tons.	8.12	8.00	8.06	11.10	10.79	10.95	26.4	10.36	9.94	10.15	12.56	12.33	12.45	18.43
Coal used per hr., lbs.	3,448	3,334	3,391	4,052.9	4,228.7	4,140.8	.....	4,094	3,614	3,854	4,360	4,380	4,370	.....
Coal used per h.p. hr., lbs.	7.30	6.74	7.02	10.70	8.68	9.69	27.51	7.02	5.88	6.45	9.15	7.77	8.46	23.78
Water used, gals.	11,500	11,234	11,367	16,821	15,751	16,286	30.20	14,319	14,855	14,587	18,901	19,940	19,421	24.89
Water used per hr., lbs.	20,527	19,483	20,005	25,952	25,761	25,857	.....	23,600	22,450	23,025	27,573	29,355	28,464	.....
Coal used per h.p. hr., lbs.	44.00	39.65	41.82	68.77	52.77	60.77	31.19	40.35	36.49	38.42	58.22	52.04	55.12	30.30
Ton-miles per lb. coal.	9.35	8.77	9.06	6.46	7.28	6.87	31.92	7.74	8.11	7.92	6.10	6.50	6.30	25.72
Ton-miles per gal. water.	12.90	12.45	12.67	8.38	9.96	9.17	38.19	11.15	10.88	11.02	7.99	8.04	8.01	37.52
Average drawbar pull, lbs.	9,692	10,400	10,046	8,988	10,893	9,941	.....	13,000	14,870	13,935	12,160	14,000	13,080	.....
Maximum drawbar pull, lbs.	40,680	36,700	38,690	38,600	43,200	40,900	.....	40,440	44,970	42,700	33,800	40,950	37,375	.....
Work done, h.p. hr.	470.9	495.7	483.3	378.8	490.4	434.6	.....	586.8	615.0	600.9	477.6	564.8	521.2	.....

*Belle Plaine to Tama. †Tama to Boone.

shows this to be too high. It will be noticed that the time elapsed in making the runs with the superheater and the non-superheater engines from Boone to Belle Plaine was quite different; in the case of engine 1727 the time stopped was over one hour longer than in the case of either of the superheater engines. This delay of course means a waste of coal. Engines 1797 and 1731 give a fairer comparison in the trip from Boone to Belle Plaine, in that the total time for these runs is very nearly the same. Using these ton-mile figures the per cent. saving for the superheater is shown to be only 20.5 per cent. All the other data shown should be considered or analysized in the same way in order to get at the true amount of the saving. It will also be noticed in the trips from Belle Plaine to Boone that the number of cars in the train varied, the division point being at Tama.

The money value of the saving due to the superheater has been calculated according to the figures given in this table and it was shown that $6.17 in water and coal could be saved on eastbound trips, which would equal an average saving of $2,221 per year. The saving westbound was shown to be $4.98 for the coal and water per trip, or $1,792 per year. The sum of these two amounts when compared with the cost of applying the superheater to each locomotive shows that the superheater would be paid for in less than six months. These figures are, of course, somewhat larger than they should be, as noted above.

A NEW METHOD OF TESTING RAILS.

In a recent article in *Le Gemé Civil,* M. C. Fremont describes some experiments made with rails from which he drew the conclusion that mild steel of a good quality may be so exposed to detrimental treatment that, notwithstanding the fact that it might successfully pass the usual tensile tests as to strength and ductility, it may be so brittle or fragile that it will break under the effect of a single blow.

In order to determine whether a sample of mild steel has this dangerous characteristic, the well-known one-blow method of testing was used and the specimens were not nicked. The specimens used were 0.31 in. deep, 0.39 in. wide, and 1.18 in. long. They were placed on knife edges .82 in. apart, and struck one blow by a weight of 22 lbs. falling 13 ft. 1½ in., so that the striking energy was about 290 foot pounds. Tough steel, under this test, merely bends and shows little or no sign of a crack; brittle specimens do not bend, but crack all of the way across. A test piece is considered to be dangerously brittle if the energy absorbed in breaking it is less than 145 foot pounds.

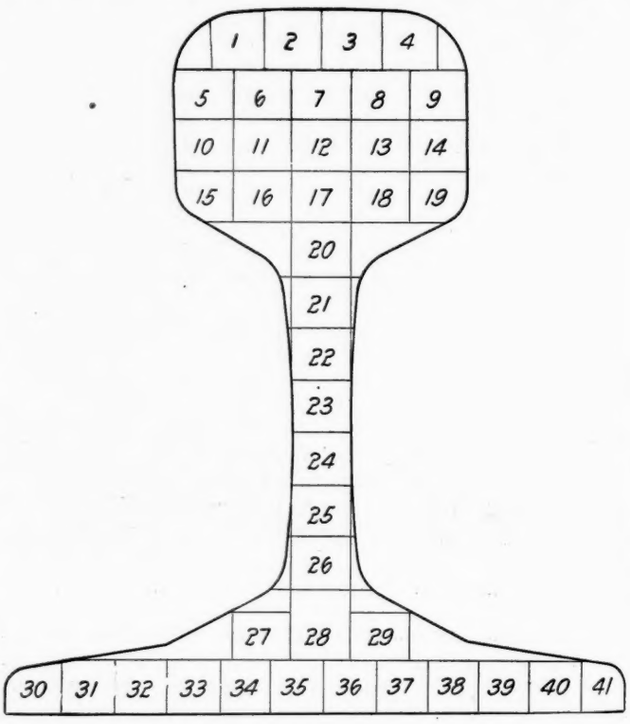
In applying this method of research, the rail sections under investigation were cut into 41 test pieces, as shown in the illustration. Broadly, the result of tests with a large number of rails of all descriptions shows that in brittle rails the test pieces in the interior of the head and those in the web—that is, specimens 6 to 18, and 20 to 26 of the illustration—have an impact figure less than 145 foot pounds, and the remaining test pieces, except in very inferior rails, give a good impact figure. It is obvious that the cost and delay of cutting up a rail section into so many small test pieces would be impracticable. Therefore Fremont has devised a simple impact test based on these results, and which can be carried out with a short length of rail of the full section after removing at the center of the length the top portion of the head; namely, test pieces 1 to 4. He uses a special apparatus for carrying out this test.

In recent years rail breakages in France have been as frequent as 1 in 2,000; in Germany they have averaged 1 in 1,150. Fremont says that in France, in cases of derailment, the rails have been bent and twisted out of shape without breaking, and yet those rails which have broken in service never show any deformation at the fracture.

Fremont discriminates between two kinds of brittleness. In the first case the material is originally tough and the brittleness does not become apparent until after several years of use, due, it would appear, to the hardening effect of the pressure caused by the wheels, producing minute cracks at right angles to the length of the rail. These cracks, being external, are easily detected and no serious danger should result from them. They are probably due to the material of the rail being originally too soft.

In the second case, the material of which the rail is made is initially brittle, and, according to the amount of this brittle material in the rail section, the rail will break, either after some service, or even during transportation or laying.

For example, vibration and shock will produce internal cracks which take their origin in the area of segregation, and gradually extend from one grain of impurity to another. Such internal cracks are extremely dangerous, as they cannot be seen and, therefore, no warning is given. It may be said that the author's investigations and the new test he proposes are principally addressed to detecting rails subject to this defect. The ordinary tup test in France generally prescribes that the foot of the rail shall be underneath, thus being put in tension on receiving the blow. It is obvious that a rail like that just described will, under these



Location of Test Pieces.

conditions, pass the test satisfactorily, owing to the tough material in the flange and at the outside portion of the head. If, however, a certain portion of the depth of the head be removed, the brittle portion is exposed, and if, further, in making the drop test, this brittle portion is placed underneath so as to be put into tension on receiving the blow it would be fractured with one, or at most two, blows if it were brittle internally.

This modification in the usual test constitutes Fremont's proposed new test, and it has the advantage that it can be carried out with short pieces of rail, say, 18 in. to 19 in. long. A series of trials was made to ascertain how much of the head of the rail should be removed, and it was found that the depth of the cut should not be less than 0.79 in.

As far as the tests are concerned, the new method appears to discriminate satisfactorily between sound and unsound rails. To establish this method as a standard method will require undoubtedly further independent research, but the work already done by Fremont is amply sufficient to show that present methods are—to put it mildly—not always reliable, and that the new method merits further close study with a view to its adoption.

FREIGHT CAR RECORDING ON THE CANADIAN PACIFIC.

The car record office of the Canadian Pacific, at Montreal, which uses the Betts system of reports and methods of work, now makes an average of 47,000 entries a day, and Mr. Altimus, the car accountant, says that as compared with ordinary methods the work of recording can be begun much earlier after the receipt of the conductor's reports; that the clerks make more entries a day, and that inquiries of all kinds can be more promptly replied to. He cites other important advantages. We give herewith a facsimile, reduced one half in height and width, of the heading and the first four lines of the conductor's train report, as used in the Betts system. This blank at once strikes the observer as remarkable by reason of its size, 12 in. wide by 18 in. in height. A sheet of these dimensions has room for entries of 38 cars, besides the caboose. This great length of sheet is necessary to carry out the fundamental principle of the system, which is to provide a separate *sheet* for each item, so that the original writing can be quickly carried to the desk where the item is to be recorded. This is accomplished by cutting the report into 38 parts.

The "engine record" at the right of the sheet occupies only a small space, at the top, the space below this being used for a tonnage record and for other statistical data. The main part of the report is that included in columns AA to AN inclusive, and the part which goes to the car recorders is only that containing columns AA to AF inclusive. This is the part that is cut up for the recorders. This, however, does not mean that the sheet is cut in two vertically at the right of column AF. It is not cut at all; there is a separate sheet, 5 in. wide, containing a duplicate of these columns, and this, by the use of carbon paper, is filled out by the conductor by the same writing as the principal report. Strips of this 5 in. sheet are cut apart horizontally to be distributed to the recording clerks. Sample strips are shown in Fig. 2. The holes punched at the left-hand side of the slips are ⅛ in. in diameter and are to enable the cutter to quickly put the slips on spindles for filing by the sorting clerks.

A similar form is used for the agents' daily interchange reports. This report also is made with carbons, white copies for the general office, a pink copy for the agent of the delivering road at the junction and a yellow copy for the agent of the receiving road.

When the conductors' and agents' reports are received at the recording office they are sorted so that those having only one item may be placed in one lot, those with two items in another and so on. The sheets are then made up into packages containing 200 to 300, with those showing the smallest number of cars on top. This being done, the cutter is able to throw away the blank slips as they come from the cutting machine and to give to the clerks only those slips which are to be recorded.

The amount of work done by the office or by each clerk is calculated by counting the slips; and these are counted by weight, the slips being weighed before being handed out to the sorting clerks. The weighing is done with a common apothecary's scale having a beam graduated to sixteenths of an ounce, 1-16 of an ounce being the weight of 17 slips.

Five clerks are employed to sort the slips. They put the numbers in proper numerical order to give each recording clerk those numbers which are to be entered in his book, and no others. The sorting is done by putting the slips, one by one, on brass spindles, 4¾ in. high, the sorter's desk having two rows of spindles 1 in. apart, the second row being 7 in. behind the first.

At regular periods during the day a sorting clerk carries to each recorder the slips belonging to him. When this system was introduced a thousand errors a day were made by the sorting clerks, but by education this has been reduced to 150 a day, or one-third of 1 per cent. of the slips handled; and these errors are mostly due to illegible writing on the part of the conductors.

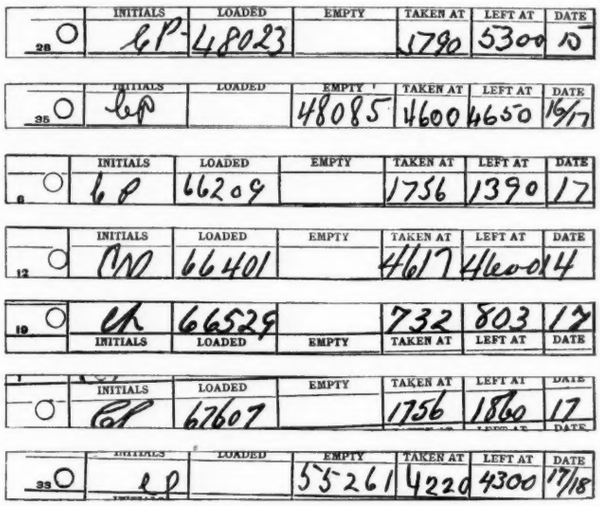

INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
28 GP 48023 1790 5300 15
INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
35 GP 48085 4600 4650 16/17
INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
6 GP 66209 1756 1390 17
INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
12 CNO 66401 4617 4660 14
19 CR 66529 732 803 17
INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
GP 67607 1756 1860 17
INITIALS LOADED EMPTY TAKEN AT LEFT AT DATE
33 GP 55261 4220 4300 17/18

Fig. 2. Samples of Record Slips.
(Two-thirds actual length.)

The average recording clerk makes four to five entries a minute and they work at their books about six hours a day, spending the balance of their time in other kinds of work. At the end of the day the weighing clerk credits each clerk with the number of entries which he has made. In this way an absolute check can readily be kept on the work of all the clerks.

The interchange record slips for foreign cars can be sent to the owners of the cars, in lieu of junction cards; and this is being done with 80 roads already.

One of the new sleeping cars sent from England to the Malay States has now been placed in service between Singapore and Kuala Lumpur. The car contains eight separate sleeping rooms on either side of a central passage. The rooms are shut off from the passage by doors and are comfortably furnished. Each contains two berths, with spring mattresses, one above the other; a large half-length looking-glass, a shut-up washstand which can be converted into a writing table, and step ladder for the upper berth. The rooms are lighted by three small electric lamps and one large one, and well ventilated by two windows with wire-gauze screens and blinds, as well as by a ventilator over the large electric lamp in the roof. The sides of the rooms and corridor are paneled with English oak, while the bed rails are polished brass. In addition to the bedrooms, each car contains lavatories and a bathroom, with a shower bath.

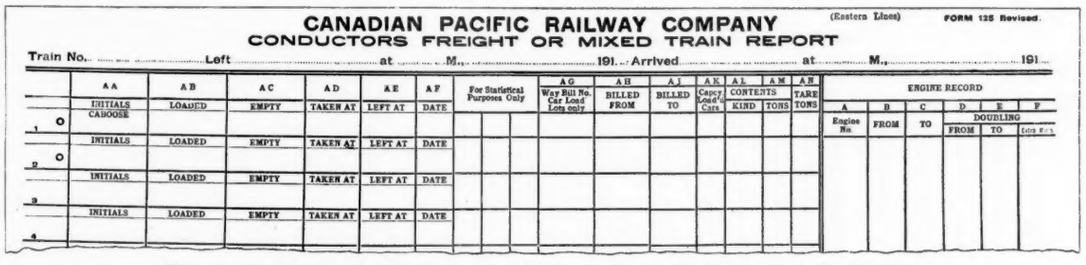

CANADIAN PACIFIC RAILWAY COMPANY (Eastern Lines) FORM 125 Revised.
CONDUCTORS FREIGHT OR MIXED TRAIN REPORT
Train No.... Left ... at ... M., ... 191.. Arrived ... at ... M., ... 191...
AA AB AC AD AE AF | For Statistical Purposes Only | AG AH AJ AK AL AM AN | ENGINE RECORD A B C D E F
INITIALS CABOOSE | LOADED | EMPTY | TAKEN AT | LEFT AT | DATE | Way Bill No. Car Load Lots only | BILLED FROM | BILLED TO | Capcy Load Cars | CONTENTS KIND | CONTENTS TONS | TARE TONS | Engine No. | FROM | TO | DOUBLING FROM | DOUBLING TO
1 O
INITIALS | LOADED | EMPTY | TAKEN AT | LEFT AT | DATE
2 O
INITIALS | LOADED | EMPTY | TAKEN AT | LEFT AT | DATE
3
INITIALS | LOADED | EMPTY | TAKEN AT | LEFT AT | DATE
4

Fig. 1. Heading of Blank for Conductor's Report; One-half Actual Width.

THE RAILWAYS, THE BIG SHIPPERS, AND THE LITTLE SHIPPERS.*

BY L. E. JOHNSON,
President, Norfolk & Western.

The great mass of shippers are dealers upon a moderate scale in the products of a single, simple department of industrial activity and cannot be expected to take as broad a view of the needs and conditions growing out of relations to all forms of productive industry as the railway officer whose success is dependent upon his ability to adapt his course so as efficiently to serve the largest possible number of producers, producing points, and forms of production. On the other hand, it is asserted that most of those shippers who forward their traffic in large volume maintain a consistently sympathetic attitude toward the railway industry and are generous and considerate in their dealings. Their daily and intimate contact with the carriers, bringing with it a necessary recognition of inter-dependence and of reciprocal service, has supplied that understanding from which nothing less significant could have sprung than full acceptance of the truism that fair and even generous dealing is the expression of the most enlightened self-interest.

The carriers cannot escape a large share of responsibility for the failure of the smaller shipper to pay due regard to so essential an element in the relations between them. Engaged in the performance of a service of *quasi* public character, holding their rights to administer their own property, as they do, subject to the public right of supervision and subject to such modifications of their practices or methods as public opinion may justify, it is the fault of the carriers themselves if they have failed to induce a favorable public sentiment through the legitimate instrumentality of the fullest and most friendly understandings with their smaller as well as their larger patrons.

Admitting, however, for the purpose of the argument, the utmost dereliction in this respect that can be charged against them, the railways, having resolved no more to sin by these omissions, may rightfully demand the support and assistance of the larger shippers in bringing about a satisfactory understanding with all shippers. Authority for this position lies in the incontrovertible fact that the aloofness of the smaller shippers is the direct result of their fear or mistrust of their larger competitors. This finds frequent and emphatic expression in the repeated averments by smaller shippers that they are not so much concerned as to the actual charges upon their shipments provided they can be assured that no one else is permitted to ship at lower rates or upon more favorable terms. The abolition of rebates but partly solves the problem, though I cannot but regard that as the most notable accomplishment in traffic affairs during the past decade. And, in passing, let me say just here that, while not failing to give due and proper credit to Congress, the commission, and other governmental authorities for their part in bringing about this needed reform, yet we should not fail to remember that no small part of this result has been due to the initiative and co-operation of the railway managers and traffic officers of this country and to their cordial support in making the laws on this subject thoroughly effective.

To sell transportation in wholesale quantities to a large and regular purchaser has not lost its attractiveness, nor has the ability to offer traffic in enormous quantities been deprived of its persuasive power. Miracles are as unlikely to result from regulative legislation as from any other sort of human effort. The larger shipper still possesses the advantages, in negotiations concerning rates or facilities, which grow out of the revenue producing value of his traffic, and if these advantages are pressed there are lawful possibilities, the realization of which would be resented by those unable to profit by them. Every railway traffic officer and every industrial traffic manager knows the truth of this assertion and both recognize the necessity of resisting the admission into railway practice of any concessions to the large shippers which would warrant resentment from any quarter. If railways were not prohibited from entering, among themselves, upon those arrangements which would make self-restraint effective and secure stable rates and the orderly maintenance of reasonable relations with all shippers, the remedy would be in their own hands and they could apply it with wisdom and finality. But their hands are tied by existing laws, and even the recently adduced "rule of reason" apparently does not relieve them from the burden of the uneconomic methods which those laws impose upon them. Therefore, it is necessary for them to invoke the co-operation of the larger shippers and to ask of the latter that they shall not, in the furtherance of narrow and selfish interest, press upon even the weakest carrier demands for lawful concessions which, if admitted, would become the subject of complaint and bring about a new period of controversy and unrest. The railways are fully warranted in making this request, for they can rest it confidently upon the truth that no mere advantage in rates or facilities which any carrier could lawfully grant would, in the end, compensate for the injuries which would come to all through a renewal of the controversies that have characterized the decade just ended.

Public sympathy is always with the poor as against the rich, with the weak as against the strong, with the small as against the great. The under-dog may have his jaws firmly gripped upon the throat of his rival, but while the noise of the contest continues the sympathy of the crowd is his. The smaller shipper may have immense advantages in production and even in the common market, but let him acquire a grievance against a railway over alleged favoritism to a larger competitor, and he has only to air it in public to convince many that duty requires them to agitate for his redress. This attitude of the public is neither unnatural nor to be condemned. Doubtless public prejudice in favor of the small shipper will yield to reason if it appears that he has complained without justification, but, even though explanation be practicable, the occasions requiring explanation should be reduced to a minimum. In short, if mutual understanding between the buyers and sellers of railway transportation is essential to the general well-being—and I have spoken in vain if I have not established that truth—the small shipper must not be disregarded. He too must be satisfied, for his prosperity and his contentment are the safeguards of the rights of the larger shippers, the guarantors of the prosperity of all.

*From an address before the Traffic Club of Pittsburgh, November 9, 1911.

FOREIGN RAILWAY NOTES.

The cash-on-delivery system in respect to parcels will be introduced by the railway department of New Zealand, making it possible for tradesmen to consign goods to clients, the department collecting the charges and paying the amount to the consignors.

A practical test of the Renard road trains will be made in New Zealand, and, if successful, similar trains will be put in service to provide a means of transport to the nearest railway station for settlers in sparcely populated districts. Increasing use is to be made of motor cars to connect with railways in towns not yet having railway facilities.

The Northern Central Railway, Spain, has received a concession for an extension to Logrono, in northern Spain, and is also seeking to obtain concessions for a branch to Estella and Pamplona. These extensions would penetrate a region rich in agriculture and mining products and would furnish the main line with a considerable increase in freight tonnage.

The annual statement presented to the New Zealand parliament by the minister of railways shows a net profit in 1910 of $5,795,564, the total earnings amounting to $17,004,437, the highest in the history of the railway department. A profit of 4.06 per cent. is shown on the invested capital. The minister of railways says that parliament will be asked to sanction an expenditure of $486,650 on grade-reduction work, one-fourth of which would be spent each year for four years.

General News Section.

At London, Ky., nine railway contractors have been indicted on charges of peonage, many negroes being said to have been held in involuntary slavery.

The passenger station at White River Junction, Vt., was destroyed by fire November 28; loss $80,000. The building was owned jointly by the Boston & Maine and the Central Vermont.

The Erie and the Cleveland, Cincinnati, Chicago & St. Louis are arranging to use the single track line of the Erie and the single track line of the Big Four between Dayton, Ohio, and Durbin (near Springfield) jointly as a double track railway. It is expected that this arrangement will be put into effect about January 1.

The United States attorney general has brought suit against the New York Central & Hudson River in the United States district court at Boston to recover penalties of $500 each for 28 alleged violations of the hours-of-service law. It is claimed that the company required enginemen, firemen, conductors and brakemen on certain trains between Rensselaer, N. Y., and West Springfield, Mass., to work more than 16 consecutive hours, and also that telegraph operators at Springfield, Mass., were required to work more than nine consecutive hours.

The State Tax Board of Indiana, having taxed refrigerator and other cars which pass through the state, but which are owned by shippers in other states, has encountered the usual remonstrances from the owners; but in its statement sustaining its position it has produced an argument which is somewhat novel. Investigating the conditions of one Illinois concern, the Board finds that while the length of the railways owned by this car owner is only 7,850 ft., the cars owned by it aggregate a length of 15,750 ft.; incontrovertible evidence that the cars are not used at home!

The Chicago Anti-Smoke League, of which Mrs. C. H. Sergel is president, has addressed a petition to the Chicago City Council demanding that the application of the Central Terminal Railway for an ordinance giving it the right to cross streets and alleys for its new freight terminal be refused unless the railway agrees to use electric traction. The Central Terminal is a subsidiary of the Minneapolis, St. Paul & Sault Ste. Marie, which proposes to build an elevated freight terminal costing approximately $6,000,000, in the heart of the Ghetto district. (See *Railway Age Gazette*, December 1, page 1140.)

The Veteran Association of the Nickel Plate Railroad (New York, Chicago & St. Louis) has issued a pamphlet containing the proceedings of its fifth annual convention, which was held recently at Niagara Falls, Ont. This association now has over 300 members. The pamphlet contains portraits of a number of the veteran officers of the road. The president of the association for the ensuing year is E. A. Miller, superintendent of motive power. A veteran is one who has been in the service of the road 25 years. The oldest can have served only a little longer than that, as the road has been in operation only twenty-nine years.

Smoke Abatement and Electrification in Chicago.

The Chicago Association of Commerce committee of investigation on smoke abatement and electrification of railway terminals has prepared a sketch of the origin and progress of its investigation to the present time. It appears that considerable study has been put on the problem and that a very satisfactory start has been made toward the collection of data and necessary information. It is expected by the committee that within the next few months tangible results will be shown.

Smoke abatement in Chicago is naturally divided into three periods: the first beginning with the passing of the ordinance of 1881, when smoke abatement was made a branch of the city health department's activities; the second beginning with the ordinances of 1903 and 1905, when smoke abatement was included in the work of the steam boiler inspection department; and the third beginning with the ordinance of 1907, when smoke abatement was made an independent department. The first steps toward the appointment of the present committee were taken at a meeting of the Chicago Association of Commerce on March 18, 1911. Four members of the committee were appointed by the mayor and fourteen by the Association, the latter including a number of prominent railway officers and competent engineers. The expense of the investigation is being borne by the railway companies interested. Horace G. Burt was chosen chief engineer and has selected a corps of assistants who are specialists in various lines of engineering, as mentioned from time to time in the *Railway Age Gazette*. The scope of the investigation is, first, a determination as to the necessity of changing the motive power of steam railways to electric or other power; second, the mechanical or technical feasibility of such change; and, third, the financial practicability of the change. The committee has published 15 documents which include various statements of its proposed lines of work, a brief historical sketch of the movement for smoke abatement in Chicago, a memorandum of the maps prepared for the study of this problem, and an investigation of a report on the loss and damage caused by smoke in Cleveland. This report was found to be based on methods so speculative that the conclusion that a loss of five or six million dollars was resulting from smoke might as easily have been made as that the loss was one or two million dollars. Studies have been made on smokeless fuel for locomotives, on definitions and designations of smoke, smoke measurements with special reference to the Ringelmann chart and other papers on smoke measurement in this country and abroad.

Denatured Alcohol in Railway Service.

A paper on this subject, from which the following extracts are taken, was presented before the November meeting of the Western Railway Club by Michael Schwarz. For years the question of properly lighting railway stations, not only the country flag station, but the waiting rooms in good sized towns and small cities, has been a serious one. Of all the dark, dreary, shadowy, "spooky" places in the universe, the average waiting room of the country station at night stands pre-eminent. Electricity and gas are out of the question in the country districts and villages, and even in the towns and smaller cities the railway stations are frequently so far removed from the other sections of the town, that the lines do not reach them. So the only recourse was the kerosene lamp. Station agents do not take kindly to cleaning chimneys and trimming wicks and filling the lamps from a greasy oil can, and so they neglect the lamp.

A number of years ago the Germans discovered the advantages of denatured alcohol as a lighting fuel. A burner was patented which generates gas as the alcohol is fed into it from the lamp fount. The ordinary gas flame gives a light equal to ten candles, more or less. By using a mantle, the actual light is increased 4 or 5 times, and its quality, steadiness and color are greatly improved. Thus one alcohol lamp produces a light of 45.2 candle power, the equivalent to 4 or 5 gas jets, or 3 ordinary incandescent electric lights.

The greatest advantage of the alcohol lamp, particularly in a railway station, is that it takes care of itself. The station agent can neglect it, but it will keep on burning just as brightly as ever. All it asks is that the fount be kept filled, an operation requiring about a minute's work. True, the lamp has a wick, which feeds the fuel to the burner, but it never comes in contact with the flame, and therefore requires no trimming. Alcohol is absolutely smokeless and the lamp chimneys will continue clean week after week. Mantles used for 12 hours every night, frequently last for 6 months, so that the only attention the lamp requires in all that time is the refilling. The relative economy of denatured alcohol for illuminating purposes is clearly established by the official report of the Electrical Testing Laboratories of New York City. For lighting purposes, one gallon of alcohol at 60 cents a gallon, is as cheap as kerosene at 18 cents a gallon. One gallon of alcohol at 55 cents a gallon, is as cheap as kerosene at 16 cents a gallon. One gallon of alcohol at 50 cents a gallon, is as cheap as kerosene at 15 cents a gallon. One gallon of alcohol at 45 cents a gallon, is as cheap as kerosene at 13 cents a gallon.

The Pullman Company has recently adopted denatured alcohol stoves in its broiler and buffet cars, and is making quite a success of them. The writer has, on many occasions, investigated

the efficiency of these stoves and finds invariably that the alcohol stove is considered superior to the gas stoves.

Portable heaters using denatured alcohol are now on the market for heating refrigerator cars. They have been in tests and actual service, for more than a year. The heater is used as a gravity feed burner. Wicks and hand manipulated valves are entirely eliminated. They are regulated automatically, and will burn for a period of 10 days without attention. The burning of denatured alcohol does not require the admission of any free air into the car to support combustion, the air is not vitiated to any appreciable extent, and the products of combustion are used as a heating agent. It does produce antiseptic conditions. There is no smoke or soot, therefore it seems to be the ideal fuel to use in the cars for the protection of eatable products. The heater is made in two sizes, single and double burners, and can be applied to any car by setting it on the floor at the door, or by placing it in the ice box at the end of refrigerator cars.

Franklin Institute.

The Franklin Institute Alumni Association, organized by graduates of the school of mechanic arts of the Franklin Institute, Philadelphia, Pa., is desirous of obtaining the addresses of all graduates and former students in this country and elsewhere. The association was formed for the purpose of promoting closer relations among the graduates, and by co-operation to further, if possible, the professional interests of each member. The officers are anxious to get into communication with the graduates with a view to presenting to them the objects of the association and the advantages of membership. Former graduates, or those who may have any information relating to them, are requested to communicate with Charles E. Hubsch, secretary of the association, who can be addressed care of the Franklin Institute.

Indianapolis Transportation Club.

The November meeting of this club was held at the Board of Trade building, November 28, with a large attendance. Addresses were given by F. J. Woulfe, general freight agent of the Lehigh Valley; and E. J. Reynolds of Crawfordsville, Ind., formerly president of the National Grain Dealers' Association.

American Society of Civil Engineers.

At the meeting of the American Society of Civil Engineers, held on December 6, a paper on The St. Croix River Bridge, by C. A. P. Turner, M. Am. Soc. C. E., was presented for discussion. This paper was printed in the *Proceedings* for October, 1911.

Cleveland Engineering Society.

An open meeting of the Cleveland (Ohio) Engineering Society will be held on December 12. The next regular meeting of the society will be held on January 9, when a paper will be presented on Railway Signaling, by C. E. Denney, signal engineer, Lake Shore & Michigan Southern.

American Society of Mechanical Engineers.

Dr. Alex. C. Humphreys, president of the Stevens Institute, has been elected president of the American Society of Mechanical Engineers.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

Air Brake Association.—F. M. Nellis, 53 State St., Boston, Mass.

American Association of Demurrage Officers.—A. G. Thomason, Boston, Mass.

American Association of General Passenger and Ticket Agents.—W. C. Hope, New York; next convention, Seattle, Wash.

American Association of Freight Agents.—R. O. Wells, East St. Louis, Ill.; annual, June 18-21, Chicago.

American Association of Railroad Superintendents.—O. G. Fetter, Carew building, Cincinnati, Ohio; 3d Friday of March and September; annual, March 17, Chicago.

American Electric Railway Association.—H. C. Donecker, 29 W. 39th St., New York.

American Railway Association.—W. F. Allen, 75 Church St., New York.

American Railway Bridge and Building Association.—C. A. Lichty, C. & N. W., Chicago. Next annual convention, third week in October, 1912, Baltimore, Md.

American Railway Engineering Association.—E. H. Fritch, Monadnock Block, Chicago; annual convention, March 19-21, 1912, Chicago.

American Railway Master Mechanics' Association.—J. W. Taylor, Old Colony building, Chicago. Annual convention, June 17-19, Atlantic City, N. J.

American Railway Tool Foremen's Association.—M. H. Bray, N. Y., N. H. & H., New Haven, Conn.

American Society for Testing Materials.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

American Society of Civil Engineers.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

American Society of Engineering Contractors.—J. R. Wemlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.

American Society of Mechanical Engineers.—Calvin W. Rice, 29 W. 39th St., New York.

Association of American Railway Accounting Officers.—C. G. Phillips, 143 Dearborn St., Chicago; annual, June 26, 1912, Quebec, Que.

Association of Railway Claim Agents.—J. R. McSherry, C. & E. I., Chicago; annual convention, May 22, 1912, Los Angeles, Cal.

Association of Railway Electrical Engineers.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago.

Association of Railway Telegraph Superintendents.—P. W. Drew, 135 Adams St., Chicago; annual, June 24, 1912, New York.

Association of Transportation and Car Accounting Officers.—G. P. Conard, 75 Church St., New York; December 12-13, Louisville, Ky.

Canadian Railway Club.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

Canadian Society of Civil Engineers.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

Car Foremen's Association of Chicago.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

Central Railway Club.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

Civil Engineers' Society of St. Paul.—D. F. Jurgensen, 116 Winter St., St. Paul, Minn.; 2d Monday, except June, July and Aug., St. Paul.

Engineers Society of Pennsylvania.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

Engineers' Society of Western Pennsylvania.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

Freight Claim Association.—Warren P. Taylor, Richmond, Va.; annual, May 15, Buffalo, N. Y.

General Superintendents' Association of Chicago.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

International Railway Congress.—Executive Committee, rue de Louvain, 11 Brussels; 1915, Berlin.

International Railway Fuel Association.—D. B. Sebastian, La Salle St. Station, Chicago.

International Railway General Foremen's Association.—L. H. Bryan, Brown Marx building, Birmingham, Ala.

International Railroad Master Blacksmiths' Association.—A. L. Woodworth, Lima, Ohio.

Iowa Railway Club.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August, Des Moines.

Master Boiler Makers' Association.—Harry D. Vought, 95 Liberty St., New York; annual convention, May 14-17, Pittsburgh, Pa.

Master Car Builders' Association.—J. W. Taylor, Old Colony buiuding, Chicago. Annual convention, June 12-14, Atlantic City, N. J.

Master Car and Locomotive Painters' Association, of United States and Canada.—A. P. Dane, B. & M., Reading, Mass.; next annual convention, second week in September, 1912.

New England Railroad Club.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

New York Railroad Club.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

Northern Railway Club.—C. L. Kennedy, C., M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

Omaha Railway Club.—H. H. Maulick, Barker Block, Omaha, Neb.; second Wednesday.

Railroad Club of Kansas City.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

Railway Club of Pittsburgh.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

Railway Industrial Association.—G. L. Stewart, St. L. S. W. Ry., St. Louis, Mo.; annual, May 12, 1912, Kansas City, Mo.

Railway Signal Association.—C. C. Rosenberg, Bethlehem, Pa.

Railway Storekeepers' Association.—J. P. Murphy, Box C, Collinwood, Ohio.

Richmond Railroad Club.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

Roadmasters' and Maintenance of Way Association.—L. C. Ryan, C. & N. W., Sterling; September, 1912, Buffalo, N. Y.

St. Louis Railway Club.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

Society of Railway Financial Officers.—C. Nyquist, La Salle St. Station, Chicago.

Southern Association of Car Service Officers.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.

Southern & Southwestern Railway Club.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

Toledo Transportation Club.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

Traffic Club of Chicago.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

Traffic Club of New York.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

Traffic Club of Pittsburgh.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

Train Despatchers' Association of America.—J. F. Mackie, 7042 Stewart Ave., Chicago; annual, June 18, 1912, Louisville, Ky.

Transportation Club of Buffalo.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

Transportation Club of Detroit.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

Traveling Engineers' Association.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.; August, 1912.

Western Canada Railway Club.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

Western Railway Club.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

Western Society of Engineers.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Wednesday in month except July and August, Chicago.

Wood Preservers' Association.—F. J. Angier, B. & O., Baltimore, Md.; annual, January 16-18, Chicago.

Traffic News.

Reports of the Texas Demurrage & Storage Bureau for October show that 1,171 stations reported 132,710 cars, of which 94.09 per cent. were released before demurrage accrued.

At the December meeting of the St. Louis Association of General Passenger Agents, Frank B. Gildersleeve, assistant general passenger agent of the Baltimore & Ohio Southwestern, was elected president.

The Southern Illinois Millers' Association has filed a complaint with the Interstate Commerce Commission, attacking reshipping rates on grain products between St. Louis and East St. Louis and the Atlantic seaboard, and alleging discrimination as compared with the intermediate rates.

Incidental to the unprecedented movement of wheat from Western Canada to Eastern markets, the Canadian Pacific reports that in a single day of 24 hours the number of cars of freight moved eastward from Winnipeg was 1,003. Trains of 45 cars each were sent out at intervals of about one hour. The total number of cars moved to and from Winnipeg on all divisions during that day was 3,389.

The legislature of California, which at its last session made a radical revision of the laws of the state regulating railway operation, has now before it a bill making further and more detailed changes in its legislation. The bill has been drawn by Mr. Eshleman, the president of the State Railway Commission, in conjunction with a number of lawyers, and is intended apparently to cure defects which were left in the present statutes because of lack of time to thoroughly consider all questions.

The Railway Ticket Protective Bureau has issued a circular letter announcing the successful prosecution of a ticket scalper in California for using the United States mails to defraud. On complaint of the Atchison, Topeka & Santa Fe, Judge Wellborn on November 8 sentenced Charles Jordan of Los Angeles to 30 days in jail for writing letters offering to sell non-transferable tickets at less than tariff rates. Jordan had been carrying on his business under various aliases. Judge Wellborn said he made the sentence light because Jordan had already been in jail two months awaiting trial.

The federal grand jury at Chicago is said to be conducting an investigation of the alleged payment by Eastern railways of excessive advertising rates to theatrical publications as an inducement to influence the routing of passenger traffic controlled by theatrical agencies. Several passenger officers of lines between Chicago and New York and representatives of New York theatrical agencies have testified before the grand jury. It is understood that certain theatrical agencies in New York have made a business of soliciting advertising from the railways for theatrical publications of a limited circulation and have refused to patronize roads that do not pay their rates.

The Secretary of Agriculture, in his annual report just issued, recounts in some detail what the officers of his department have done during the past year toward the promotion of road building. The department finds that there are in this country 2,210,857 miles of wagon roads, of which only 8½ per cent. are improved; but in 1904 only 7.13 per cent. were improved, the increase in the five-year period, 1904-1909, being 34,379 miles. The Office of Public Roads, a bureau of the department, has during the past year built, at local expense, object-lesson roads in 52 places, for which the sum of $120,000 was expended. Expert advice on road-work has been given in 183 cases, scattered throughout thirty states. This work related not only to road building but to the economic and financial questions related to such work. The agents of the department who have traveled over the country to investigate road building have given also 723 lectures in 35 states. These lectures have been attended by 200,000 persons, mostly farmers. The department employs each year graduate engineers who are instructed during a period of one year and who thus gain experience which fits them for important positions all over the country. The department has made many tests of road materials, road binders and dust preventives; and finds that many worthless road preparations are being offered to the public and in many cases sold. The use of oil-mixed cement concrete for roads is looked upon as an important improvement.

Eastern Steamship Corporation.

This is the name of a corporation which has been organized at Boston to take over the vessels and the business of nearly all of the steamers doing business between Boston and ports east of there, including the Maine Steamship Company, which operates between New York and Portland. It is expected also to take in the Metropolitan Steamship Company, which runs freight boats between New York and Boston. The two last named companies have been controlled by the New York, New Haven & Hartford Railroad, and with the present transfer that road disposes of its interest in all maritime traffic east of New Bedford, Mass.

Illinois Central Suburban Fares in Chicago.

The Illinois Central on December 1 voluntarily established a new tariff of reduced commutation fares in Chicago applying between downtown stations and all stations as far up as Forty-seventh street. On 25-ride tickets the new rates give a five-cent fare between the city and points as far south as Forty-third street. The reductions were made in part to meet the increasing competition of the South Side Elevated and surface street car lines and are in pursuance of a policy of improving the suburban service generally. The old and the new rates for twenty-five and ten-ride tickets are as follows.

	25 Rides.		10 Rides.	
To or From—	Old.	New.	Old.	New.
Thirty-first street	$1.25	$1.25	$0.60	$0.50
Thirty-sixth street	1.50	1.25	.70	.60
Thirty-ninth street	1.50	1.25	.70	.60
Forty-third street	1.60	1.25	.80	.60
Forty-seventh street	1.80	1.60	.90	.60
Fiftieth street	2.00	1.90	.95	.80

On December 3 the suburban train service was improved by the addition of sufficient trains to give a four-minute service, instead of a five-minute service, during the rush hours on week days, and on Sundays a fifteen-minute service instead of thirty-minute.

Recommended to the Southern Governors Who Are Discussing the Low Price of Cotton.

President Finley, of the Southern Railway, in an address at the Black Soil Belt fair at Demopolis, Ala., said: "It is particularly desirable that the cotton farmer should have a steady source of income throughout the year. The local demand throughout the South for dairy products, poultry and eggs is such as to enable the farmer who produces a surplus of these commodities to have a weekly income throughout the year sufficient to meet his bills with the local merchants, and a regular income such as this, even though the amount received per week be small, will go far in assisting him to market his cotton when there is an economic demand for it."

Railway Associations in Chicago to be in One Building.

The principal railway traffic associations having headquarters in Chicago, now located in various office buildings scattered throughout the business district of the city, have decided to move early in the coming year into a joint headquarters for all of the associations in the new Heisen building, Dearborn and Harrison streets. This step has been decided on after a thorough investigation of the plan by a joint committee representing the associations; and a five-year lease with the privilege of renewal for another five-year period has been taken of the nineteenth, twentieth, twenty-first and twenty-second floors of the Heisen building, having a total of 50,000 square feet of floor space.

The associations which now have separate offices and meeting rooms and which will move into the new headquarters, are the Western Passenger Association, the Western Trunk Line Committee, the Transcontinental Freight Bureau and the Transcontinental Passenger Association, now in the Railway Exchange building; the Central Freight Association, in the Rookery building; the Central Passenger Association, in the Tribune building; the Western Railway Weighing Association and the Western Classification Committee, now in the Great Northern building, and the Uniform Classification Committee, in the Merchants Loan & Trust building. The General Managers' Association, with headquarters in the Western Union building, is considering joining the other associations.

About 9,000 square feet on the twenty-second floor will be devoted to meeting rooms. The offices of the Western Trunk Line Committee will also be on this floor. The distribution of the

offices of the other associations on the nineteenth, twentieth and twenty-first floors has not yet been determined. There will be one central telephone exchange and one mailing room for all these associations. On account of the necessity of making some changes in the building, it is expected that the offices will not be ready for occupancy until March or April.

The plan is believed to offer many important advantages. The total amount of space is considerably less than that occupied by the separate headquarters and is secured at a lower rate per square foot making a total saving of between $23,000 and $24,000 in rentals per year. The added convenience of a central headquarters is also an important consideration. Many railway officers are members of several associations that may be holding meetings simultaneously and it will be a great convenience to be able to go from one meeting into another, if necessary, resulting in a valuable saving of time.

Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting herewith statistical bulletin No. 107-A, giving a summary of car shortages and surpluses by groups of states, from July 20, 1910, to November 22, 1911, says:

"Contrary to the corresponding periods in the preceding years, the surplus figures reported for the period ending November 22, 1911, show a decrease of 2,231 cars, bringing the total surplus down to 43,059 cars. The decrease is probably due to the stocking up of anthracite coal in the East. The coal car surplus in group 2 (New York, New Jersey, Delaware, Maryland, eastern Pennsylvania) shows a decrease of 3,789 cars, while the total car surplus shows a decrease of 4,052 cars. Box, flat and miscellaneous cars show increases of 1,024, of 643 and of 151 cars, respectively and partially offset the decrease in coal cars.

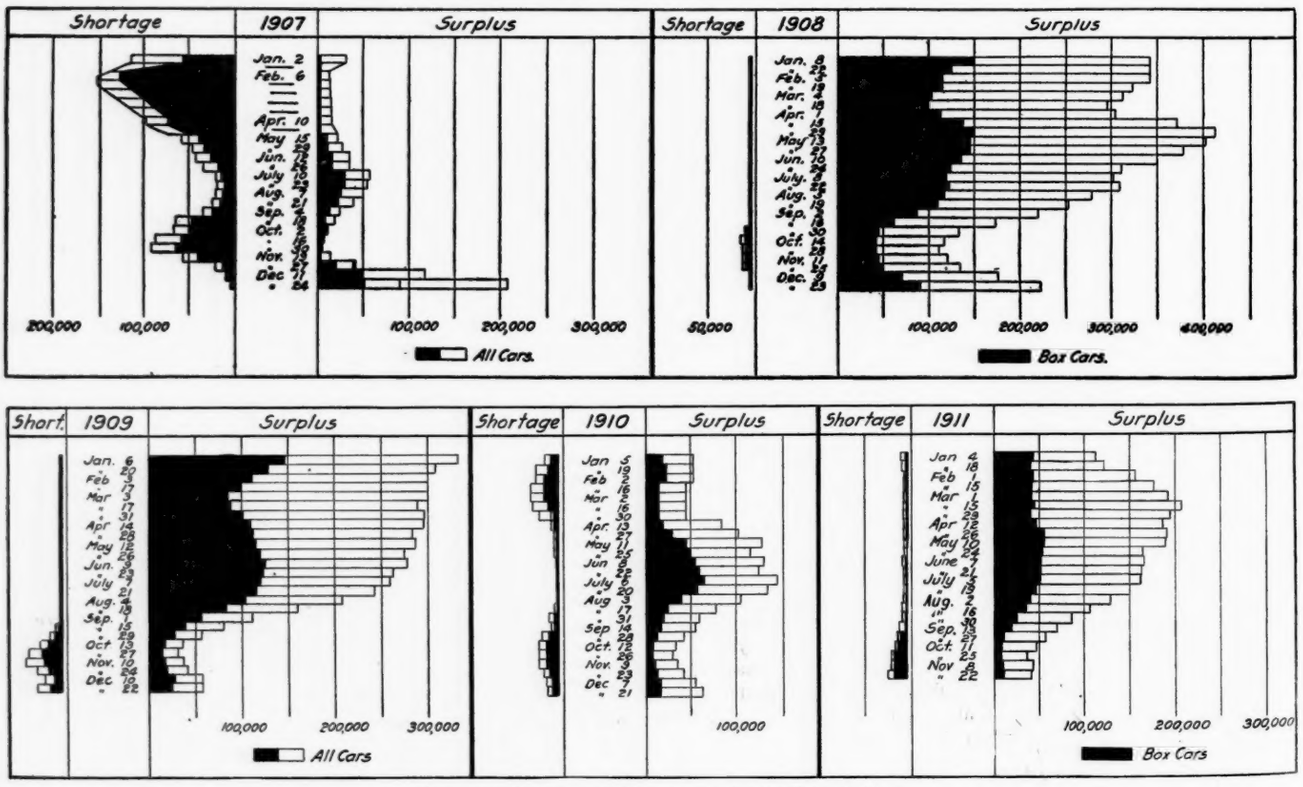
"There is an increase of 1,173 cars reported in the total car shortage. Coal and miscellaneous cars show increased shortages of 1,094 and 938 cars, respectively, while the box and flat car shortage decreased 612 and 247 cars, respectively."

The accompanying table gives car surplus and shortage figures by groups for the last period covered in the report, and the diagrams show total bi-weekly surpluses and shortages in 1907 and 1911.

Car Surpluses and Shortages.

Date.	No. of roads.	Surpluses: Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.	Shortages: Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.
Group *1.—November 22, 1911	7	373	778	140	205	1,496	349	40	258	459	1,106
" 2.— " 22, 1911	26	709	80	1,425	709	2,923	9	0	107	94	210
" 3.— " 22, 1911	26	578	810	5,879	1,559	8,826	1,459	0	405	1,357	3,221
" 4.— " 22, 1911	11	247	7	624	596	1,474	848	130	2,455	16	3,449
" 5.— " 22, 1911	19	30	62	159	1,037	1,288	175	122	623	0	920
" 6.— " 22, 1911	23	5,684	496	1,522	3,812	11,514	198	8	162	313	681
" 7.— " 22, 1911	3	0	11	11	752	774	137	0	0	0	137
" 8.— " 22, 1911	19	600	75	906	1,897	3,478	1,515	123	70	75	1,783
" 9.— " 22, 1911	10	1,497	143	247	656	2,543	400	0	0	0	400
" 10.— " 22, 1911	20	813	971	1,433	4,964	8,181	1,301	0	0	20	1,321
" 11.— " 22, 1911	5	0	251	0	311	562	6,287	60	0	374	6,721
Total	169	10,531	3,684	12,346	16,498	43,059	12,678	483	4,080	2,708	19,949

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland, and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin, Minnesota and the Dakotas lines; Group 7—Montana, Wyoming and Nebraska lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Oregon, Idaho, California and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages in 1907 to 1911.

INTERSTATE COMMERCE COMMISSION.

The commission has suspended until April 11, tariffs filed by the Chicago & North Western and other lines west of Chicago, showing increases in rates for the transportation of cattle from the west to Chicago.

The commission has extended until February 1, the time within which the trunk lines must file joint passenger tariffs, revised according to the orders of the commission in connection with its rulings on the applicability of the amended long and short haul section.

Special Examiner Gerry of the Interstate Commerce Commission on December 1, at Indianapolis, Ind., began a rehearing of the rate case originated by the complaint of the Indianapolis Freight Bureau against the railways serving the city of Indianapolis, involving charges of discrimination in the rates from Indianapolis to the Missouri river, as compared with those from Illinois and Wisconsin points.

Reparation Awarded.

Gibson Fruit Co. v. Chicago & North Western et al. Opinion by the commission:

The case shows that the carload of apples in question was shipped from Sioux City, Iowa, to New Orleans, La., under a misrouting by the defendant. (21 I. C. C., 644.)

Rates on Pineapples and Citrus Fruits Prescribed.

Florida Fruit & Vegetable Shippers' Association v. Atlantic Coast Line et al. Opinion by Commissioner Prouty:

Carriers will be directed to establish new basing points, and they are ordered to make their rates on a distance tariff. (22 I. C. C., 11.)

Minimum Weights on Ties and Lumber.

G. S. Baxter & Co. v. Georgia, Florida & Southern. Opinion by the commisison:

The defendants maintain a minimum carload weight on lumber of 24,000 lbs., but on ties of 32,000 lbs. This the commission finds to be unreasonable. However, the rates on ties from southeastern Georgia to Jacksonville, Fla., are not found to be unreasonable. (21 I. C. C., 647.)

Equipment Must Be Furnished by Carrier.

Brook-Rauch Mill & Elevator Co. v. St. Louis, Iron Mountain & Southern et al. Opinion by the commission:

The complaint is in regard to a carload of corn shipped from Omaha, Neb., on a through tariff to Fordyce, Ark., which was stopped at Little Rock, Ark., for milling-in-transit. Little Rock, Ark., is on the lines of the inbound carrier—the St. Louis, Iron Mountain & Southern—but is not reached by the delivering carrier. The inbound carrier refused to furnish equipment for the shipment after it had been stopped for milling-in-transit, because the shipment was so soon to go from its own lines, and the outbound carrier refused to furnish equipment, because Little Rock was not on its lines. The commission holds that since a carrier cannot be compelled to furnish equipment until a shipment reaches its own lines, the duty rests on the inbound carrier. (21 I. C. C., 651.)

Rates on Live Stock to Tacoma Upheld.

Carstens Packing Co. v. Union Pacific et al. Opinion by Commissioner Lane:

The complainant, while not attacking the rates in themselves on live stock from eastern Oregon points to Tacoma, Wash., via the Northern Pacific through Wallula, Wash., claims that these rates are discriminatory because of a lower rate by way of Portland, Ore. The two routes by which stock may be shipped from eastern Oregon and Idaho points to Tacoma are over the Northern Pacific via Wallula, or over the Oregon-Washington R. & N. via Portland. This latter route is 43 miles longer, but the Wallula route involves crossing the Cascade mountains, and there is a difference in rates ranging from nothing to $15 per car, the longer route having the cheaper rates. The commission finds that the fact is that the complainant, through its negotiations with the Oregon-Washington line, brought about the discrepancy which now exists in the rates by way of these two routes. Higher rates were previously in force by the longer Portland route than by way of the Northern Pacific. The complainant, after having obtained lower rates on the longer route, now attempts to get the commission to make the Northern Pacific reduce its rates to a corresponding degree. (22 I. C. C., 8.)

Retroactive Application of Milling-in-Transit.

Young & Cutsinger v. Louisville & Nashville. Opinion by the commission:

Complainants ask that the present milling-in-transit privilege be made retroactive on shipments of lumber sent out 18 months after inbound shipments of the material. The present milling-in-transit privilege went into effect nine months after the inbound shipments had been made. The commission says that milling-in-transit is a privilege which may be granted or withheld by the carrier at its discretion, as long as there is no discrimination, and the extension of this privilege carries with it no obligation on the part of the carrier to make the privilege retroactive. Even if the time between the inbound and outbound shipments were not unreasonably long the complaint would be dismissed. (22 I. C. C., 1.)

Specific Tariff Cancellation Required.

Carlos Veitch v. Seaboard Air Line. Opinion by the commission:

A tariff supplement was filed by the defendant showing a rate of $3.40 per ton on cottonseed hulls C. L. from Lorinburg, N. C., to Birmingham, Ala. This supplement, however, did not specifically refer to that portion of the previous supplement which named a rate of $2.50 per ton for the same service. The previous supplement had not been cancelled in full. The complainants ask reparation for the difference between the $3.40 rate which was charged and the $2.50 rate, which they claim was still in effect. The rule of the commission has been that reissues or supplements must state where rates will hereafter be found, and must be filed at the same time and in connection with the tariffs which contain the new rates, and must specifically state the portion of such tariff which is thereby cancelled. The railway company claims that when a supplement conflicts with a part of its original tariff, that is, the tariff which it amends or supplements, or conflicts with a part of a previous supplement to such original tariff, as is the case here, the rule has no application. This is not in accord with the spirit and purpose of the rule. The commission finds that the rule does apply to the situation presented in this case. In view, however, of the fact that the original tariff was published prior to the promulgation of the rules invoked by the complainant, and that it was later reissued in conformity with the rules, the commission does not find that the case presents a proper basis for an award of reparation. (22 I. C. C., 4.)

STATE COMMISSIONS.

The California State Railroad Commission has ordered a reduction of 50 per cent. in the freight rates on nut shells and similar products, between San Francisco and Los Angeles. The present rate of $1.20 per 100 lbs. is reduced to 60 cents.

The California State Railroad Commission has affirmed its recent decision ordering the Southern Pacific to reduce its Los Angeles-San Pedro freight rates; and announces that such reduction becomes effective not later than December 7. The reductions vary from 10 to 50 per cent. on different commodities; the principal product, lumber, is lowered from $1.20 to 80 cents a ton.

The Indiana Railroad Commission has ordered the steam roads to haul and deliver coal from the mines to the Kokomo, Marion & Western Traction Company for 65 cents a ton—the rate charged manufacturers. It was shown that the traction company produced and sold electric current to the other manufacturing plants which made it a manufacturer and entitled to manufacturer's rates. The difference in the rate is 10 cents a ton.

The Indiana State Railroad Commission has ordered the Cleveland, Cincinnati, Chicago & St. Louis to deliver coal in car load lots to the Indianapolis Union, to be switched to the Terre Haute, Indianapolis & Eastern interurban (electric) line to be transported to Plainfield, twelve miles. The ordinary charge of $2 per car is authorized. The ruling indicates the purpose of the commission to require exchange of freight between steam and electric lines where physical conditions will permit.

COURT NEWS.

In the county court at Hammond, Indiana, Judge Reiber has decided against the State Railway Commission in its suit against the Grand Trunk to enforce an order requiring the introduction of block signals. The judge holds the law invalid because it is not specific.

The Commerce Court has dismissed the petition of the Arkansas Fertilizer Company, asking to have set aside the order of the Interstate Commerce Commission barring claims for reparation unless presented to the commission within two years from the date of delivery of freight.

The United States Court of Claims at Washington has dismissed the suit of the Missouri, Kansas & Texas, asking for reimbursements for land adjacent to the line of the road in the Indian Territory, now a part of the state of Oklahoma. The value of the land claimed is given as $62,000,000.

The United States district court at Springfield, Ill., has issued a temporary injunction restraining the attorney-general of Illinois and various state's attorneys from enforcing the state two-cents-a-mile passenger fare law against the Wabash, Chester & Western Railway. The road contended that the law was confiscatory.

The Commerce Court has overruled the demurrer in the case of the Atlantic Coast Line v. the Interstate Commerce Commission in which the commission has prescribed rail and water rates on boots and shoes from New York and Boston to Atlanta, Ga. Motion to dismiss the case has been denied, and leave has been granted to amend the petition.

In the federal court in Indiana fines have been imposed on the Cleveland, Cincinnati, Chicago & St. Louis, for violations of the safety appliance act, $1,700; and on the Evansville & Terre Haute and the Grand Rapids & Indiana, smaller fines for similar violations. The Grand Rapids & Indiana and the Cleveland, Cincinnati, Chicago & St. Louis, were fined for violation of the hours of service law.

The Commerce Court has ordered counsel for the Atchison, Topeka & Santa Fe and the Interstate Commerce Commission to get together and agree on a form of final decree of injunction in the long and short haul case in which the Commerce Court has granted a temporary injunction restraining the I. C. C. from enforcing its orders. This agreement on the form of final decree is preparatory to an appeal by the United States and the I. C. C. to the Supreme Court.

At Washington, December 5, the Commerce Court sustained the order of the Interstate Commerce Commission, holding that in the allotment of cars to coal mines private cars must be counted; and dismissed, with costs, the petition of the Pennsylvania Railroad against the commission to set aside a certain order for distribution of coal cars. This order requires that privately owned cars shall be counted in with the cars of the railway when making allotment to the mines. The court ruled that the commission had acted within its jurisdiction in making such an order.

The Supreme Court of Missouri has rendered a decision sustaining the right of the Missouri Pacific to own stock in coal mining and elevator companies. The decision was rendered in ouster proceedings instituted by Governor Hadley when he was attorney-general of the state, questioning the right of the railway to ownership of the Western Coal & Mining Company, the Rich Hill Coal Mining Company and the Kansas City Elevator Company. Chief Justice Valliant, in the opinion, said that the business of mining coal or operating an elevator is not of such a character that the inhibition of the constitution would prevent a railway from engaging in either.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

W. W. Strickland, assistant freight auditor of the Atchison, Topeka & Santa Fe, at Topeka, Kan., has been appointed freight auditor, with office at Topeka, succeeding A. A. Hayes, deceased.

The officers of the Manistee & Repton are now as follows: J. B. Barnett, president; L. J. Bugg, secretary and treasurer, and J. A. Kauffman, vice-president and general manager, all with offices at Monroe, Ala.

John S. Douglas, who was apopinted acting general claim agent of the Gulf, Colorado & Santa Fe, succeeding W. L. Alexander as was previously announced in these columns, has been appointed general claim agent, with office at Galveston.

C. M. Secrist, vice-president and general manager of the Pacific Fruit Express Company at Chicago, will have his office removed to San Francisco, Cal., effective January 1, when the general offices of the company will be transferred to the latter place.

E. A. Sunderlin, vice-president and general manager of the Grand Junction & Grand River Valley at Colorado Springs, Colo., has been elected president, with office at Colorado Springs, succeeding Thomas E. Curtin, deceased. Charles L. Tutt has been elected vice-president, succeeding Mr. Sunderlin.

R. E. Williams, assistant auditor of the International & Great Northern at Houston, Tex., has been appointed auditor of the Texas & Pacific, with office at Dallas, succeeding R. Fenby, appointed consulting auditor. W. J. Werner, chief clerk to the auditor of the International & Great Northern, has been appointed assistant auditor, succeeding Mr. Williams.

W. W. Walker has been elected vice-president and general manager of the Duluth, South Shore & Atlantic and the Mineral Range, with office at Duluth, Minn., his appointment as general manager of the former road having been announced in these columns last week. Mr. Walker was born June 3, 1868, at St. Catherines, Ont., and he received a high school education. He began railway work as an office boy with the Grand Trunk in 1883, and the following year went with the Queen & Crescent Route, where he was a clerk in the traffic department for three years. He was then for a year with the Chicago & North Western in the claim department, and from October, 1888, to February, 1890, was rate clerk and chief clerk in the general freight department of the Great Northern. He was appointed traveling freight agent of the Duluth, South Shore & Atlantic in November, 1890, seven years later was promoted to assistant general freight agent, and from July, 1901, until December 1, 1911, the date of his election as vice-president and general manager, he was general freight agent at Duluth.

W. W. Walker

George V. Massey, general counsel of the Pennsylvania Railroad, will retire from that position on January 1. Mr. Massey was born on December 16, 1841, in West Whiteland township, Chester county, Pennsylvania, and was educated at Freeland Seminary in Montgomery county, and at a school at Delaware Water Gap. He was admitted to the bar in 1865, and from 1876 to 1895 he was solicitor for the Philadelphia, Wilmington & Baltimore, now a part of the Philadelphia, Baltimore & Wash-

ington. He was appointed assistant general solicitor of the Pennsylvania Railroad in August, 1895, and from November 12 to November 26, 1902, was general solicitor. Mr. Massey has been general counsel of the same road since November, 1902.

Will George Van Vleck, whose election as vice-president and general manager of the Southern Pacific lines in Texas and Louisiana, with office at Houston, Tex., has been announced in these columns, was born March 5, 1857, at Elbridge, Onondaga county, N. Y. He received a common school education, and began railway work in August, 1873, as a telegraph operator with the Grand Rapids & Indiana, remaining with that company for two years. He went with the Galveston, Harrisburg & San Antonio in October, 1875, where he until 1885 was consecutively, for one year telegraph operator, four years despatcher, one year chief despatcher, one year trainmaster of the Mexican & Pacific extension, and two years division superintendent. For over two years from March, 1885, he was superintendent of the San Antonio division; he was then transferred to the Louisiana division of the Southern Pacific Company, and six months later was made general superintendent of the lines in Texas. From October, 1895, until the time of his recent promotion he was manager of the Galveston, Harrisburg & San Antonio, and the Texas & New Orleans, and for a number of years was also second vice-president of those lines.

W. G. Van Vleck

Operating Officers.

J. B. Paul has been appointed general superintendent of the Liberty White, with office at McComb, Miss.

C. E. Prugh has been appointed assistant trainmaster of the New Orleans Great Northern, with office at New Orleans, La.

J. E. Johnson has been appointed trainmaster of the Chicago, Burlington & Quincy, with office at McCook, Neb., succeeding F. R. Mullen, promoted.

J. C. Talmage has been appointed trainmaster of the 25th district (C. S. & M.), 27th and 28th districts of the Grand Trunk, with office at Durand, Mich., succeeding F. G. Bement.

W. D. Johnson, formerly general roadmaster of the Duluth, South Shore & Atlantic, has been appointed assistant superintendent, with office at Thomaston, Mich., succeeding A. M. Sutherland, resigned.

G. E. Reel, assistant trainmaster of the Cincinnati, Hamilton & Dayton at Lima, Ohio, has been appointed trainmaster of the Toledo division, with office at Dayton, Ohio, and William A. Carruthers succeeds Mr. Reel at Lima.

C. H. Hurdleston, trainmaster of the Missouri, Kansas & Texas of Texas, at Denison, Tex., has been appointed superintendent, with office at Smithville, Tex., succeeding F. A. Lattig, resigned. T. Johnson succeeds Mr. Hurdleston.

H. C. Landon, who recently resigned from the position of division engineer of the Erie Railroad, has been appointed general manager and chief engineer with office at Lenor, N. C., of the Watanga Railroad, a new line to be built in North Carolina and eastern Tennessee.

W. F. Schaff, assistant superintendent of the Eastern division of the Lake Shore & Michigan Southern at Buffalo, N. Y., has been appointed assistant superintendent of the Toledo division, with office at Cleveland, Ohio. As has been announced in these columns, E. V. Brogan succeeds Mr. Schaff.

C. C. Arnold, superintendent of the Sandusky division of the Lake Erie & Western at Lima, Ohio, has been appointed superintendent of the Peoria division, with office at Lafayette, Ind., succeeding E. R. Bissell, resigned to go to the Lake Shore & Michigan Southern. George Dyer succeeds Mr. Arnold.

J. F. Simms, superintendent of the St. Louis & San Francisco, at Memphis, Tenn., has been appointed superintendent, with office at Springfield, Mo., succeeding A. O'Hara, deceased. C. H. Baltzell, assistant superintendent at Thayer, Mo., succeeds Mr. Simms, B. F. Hunter, assistant superintendent at Enid, Okla., succeeds Mr. Baltzell, and W. Rudd, assistant superintendent at Amory, Miss., succeeds Mr. Hunter.

R. M. Johnson, trainmaster of the Pere Marquette at Saginaw, Mich., has been transferred to Detroit. W. W. Dyer has been appointed trainmaster with office at Grand Rapids. G. E. McLaughlin, trainmaster at Saginaw, has been appointed trainmaster of the Ludington and S. T. & H. divisions and branches. E. S. Stuart has been appointed trainmaster, and F. P. Little has been appointed chief train despatcher of the Buffalo division, with offices at Port Huron. S. H. Guddall has been appointed night chief train despatcher, with office at Grand Rapids. C. J. Bailey has been appointed chief train despatcher, with office at Traverse City, and G. F. Downing has been appointed chief train despatcher at Ionia.

G. Radetzki, general superintendent of the Houston & Texas Central, the Houston East & West Texas, and the Houston & Shreveport at Houston, Tex., has been appointed assistant general manager of those lines and the Galveston, Harrisburg & San Antonio and the Texas & New Orleans. D. K. Colburn, engineer of maintenance of way of the Galveston, Harrisburg & San Antonio and the Texas & New Orleans; I. A. Cottingham, engineer maintenance of way of the Houston & Texas Central, the Houston East & West Texas and the Houston & Shreveport; and J. T. Connor, superintendent motive power and machinery of the latter three roads, have been appointed assistant general managers, with jurisdiction over the five roads. Each officer continues charged with the responsibilities heretofore devolving on him, and assumes such other duties as may be assigned from time to time. The titles of general superintendent, superintendent motive power and engineer maintenance of way will be retained to such extent only as may be necessary for compliance with laws and existing contracts. H. J. Micksch, assistant superintendent of the Texas & New Orleans at Jacksonville, Tex., has been appointed assistant superintendent of that road and the Galveston, Harrisburg & San Antonio, with office at Houston, Tex., succeeding F. B. Irvine, promoted. A. L. Kuykendall, yardmaster at Beaumont, has been appointed assistant superintendent of the Texas & New Orleans and the Galveston division of the G., H. & S. A., at Jacksonville, succeeding Mr. Micksch.

Traffic Officers.

James Edward has been appointed commercial agent of the Grand Trunk, with office at Moncton, N. B.

R. G. Hanson, Jr., has been appointed traveling immigration agent of the Southern Railway, with office at St. Louis, Mo.

W. D. Clayton has been appointed assistant agricultural and industrial agent of the Cincinnati, New Orleans & Texas Pacific, with office at Chattanooga, Tenn.

C. G. Boyer has been appointed agent of the Interstate Despatch, with office at Memphis, Tenn., succeeding M. R. Singleton, resigned to accept service elsewhere.

C. G. Collins, contracting agent of the St. Louis, Iron Mountain & Southern at Dallas, Tex., has been transferred to Little Rock, Ark., and W. L. Cates succeeds Mr. Collins.

C. D. Dunann, general passenger agent of the Pacific Coast Steamship Company at San Francisco, Cal., has been appointed passenger traffic manager, with office at San Francisco.

J. I. Hazzard has been appointed general agent of the El Paso & Southwestern and the Morenci Southern, with office at St. Louis, Mo., succeeding Charles McD. Adams, resigned.

J. F. Deatrick has been appointed general agent of the Pacific Fruit Express Company, with office at Chicago, effective January 1. See item under Executive, Financial and Legal Officers.

B. B. Stowits has been appointed live stock agent of the Erie Railroad for the lines east of Buffalo, N. Y., and Salamanca, also of the New York, Susquehanna & Western and the New Jersey & New York, with office at Buffalo.

F. S. Fisher, contracting freight agent of the Missouri, Kansas & Texas at Fort Worth, Tex., has been appointed traveling freight and passenger agent of the Texas Central, with office at Waco, Tex., succeding C. J. Hooker, resigned.

H. L. Armstrong, commercial agent of the Louisville, Henderson & St. Louis at Louisville, Ky., has been appointed general agent, with office at St. Louis, Mo., succeeding F. G. Cunningham, resigned. E. G. Jones succeeds Mr. Armstrong.

A. B. Collins, soliciting freight agent of the Queen & Crescent Despatch at New Orleans, La., has been appointed commercial agent, with office at New Orleans. A. C. Littlejohn has been appointed traveling freight agent, reporting to Mr. Collins.

J. C. Glenn, traveling freight agent of the Minneapolis & St. Louis and the Iowa Central at Minneapolis, Minn., has been appointed traveling freight agent, with office at Marshalltown, Iowa, succeeding H. R. Cammack, resigned to accept service with another company. J. A. Lucey succeeds Mr. Glenn.

Stewart R. Lewis, assistant general freight agent of the Duluth, South Shore & Atlantic at Duluth, Minn., has been appointed general freight agent, with office at Duluth, succeeding W. W. Walker, promoted to vice-president and general manager. See item under Executive, Financial and Legal Officers.

W. C. Dixon, freight solicitor of the Pennsylvania Railroad at New York, has been appointed agent, with office at Brooklyn, N. Y. Clayton Kent succeeds Mr. Dixon, and E. J. Karr and H. B. Arledge have been appointed freight solicitors, with offices at New York City.

Walter D. Burr, district freight and passenger agent of the Chicago, St. Paul, Minneapolis & Omaha at Duluth, Minn., has been appointed assistant general freight agent, with office at St. Paul, Minn. W. G. Brown has been appointed district freight agent, with office at Duluth, succeeding to part of the duties of Mr. Burr.

R. E. Tipton, general freight agent of the Wolvin Line, the Texas City Transportation Company and the Texas City Terminal Company at Texas City, Tex., has been appointed manager of the Houston branch of the J. H. W. Steele Company, in which capacity he will represent the Wolvin Line as general agent in charge of Texas territory. As has been announced in these columns, C. S. Bather succeeds Mr. Tipton as general freight agent of the Texas City Transportation Company and the Texas City Terminal Company.

Robert C. Fyfe, member of the Uniform Classification Committee, formerly assistant general freight and passenger agent of the St. Louis Southwestern of Texas, has been appointed chairman of the Western Classification Committee, with office at Chicago, succeeding F. O. Becker, deceased. A. S. Dodge, general agent of the St. Louis & San Francisco at St. Louis, Mo., formerly third vice-president, has been appointed superintendent of the Western Railway Weighing and Inspection Bureau, also succeeding Mr. Becker. F. F. Thompson, chief clerk to director of traffic of the Harriman Lines, has been appointed a member of the Uniform Classification Committee, succeeding Elmer H. Wood.

Engineering and Rolling Stock Officers.

M. C. M. Hatch, chief draftsman of the Boston & Maine, at Boston, Mass., has been appointed engineer of tests of the New York, New Haven & Hartford and the Boston & Maine, with office at Boston.

Frank V. Marshall, assistant engineer of the Wabash at Decatur, Ill., has been appointed engineer of maintenance of way, with office at Decatur, succeeding Edward Shelah, who has been appointed assistant engineer in place of Mr. Marshall, with office at Decatur.

J. F. Bowden, master mechanic of the Baltimore & Ohio, at Garrett, Ind., has had his jurisdiction extended so that he is now in charge of the Chicago division and the Northwest system, the latter including the Baltimore & Ohio Chicago Terminal. G. A. Schmoll, who has been superintendent of motive power of the lines west of the Ohio river, now has jurisdiction over the Wheeling system only. D. H. Watson, general foreman in the locomotive department at Garrett, Ind., has been placed in charge of the operation of the shops at Garrett.

C. R. Hogdon, who was recently appointed signal engineer of the western lines of the Canadian Pacific, with office at Winnipeg, Man., began railway work with the Great Northern in 1905 as a laborer. He was later made foreman of a signal crew, and was then consecutively signal repairman on the Terminal division in charge of the maintenance of automatic signals and power interlocking plants, signal draftsman and inspector of signals. At the time he left the Great Northern to become signal engineer of the Canadian Pacific as above he was inspector of signals in charge of manual and electrical signaling.

W. J. Long has been appointed engineer of the Grand Rapids division of the Pere Marquette, with office at Grand Rapids, Mich.; William Madden, division engineer at Detroit, has been appointed engineer of the Buffalo division, with office at Port Huron. J. P. Reynolds, division engineer at Grand Rapids has been appointed engineer of the Petoskey division, with office at Traverse City. V. E. Duncan has been appointed engineer of the Ionia division, with office at Ionia, and A. L. Grandy, division engineer at Saginaw, is now in charge of the Toledo, Ludington and S. T. & H. divisions and branches. C. F. Weir, supervisor of bridges, at St. Thomas, Ont., has been appointed foreman of bridges and buildings, and W. E. Shaffer has been appointed foreman of water service of the Buffalo division, both with offices at Port Huron, Mich. John Robinson, supervisor of bridges and buildings at Grand Rapids, has been transferred to Traverse City. A. Gustafson, roadmaster at Muskegon, has been transferred to Traverse City. A. McNab, supervisor of bridges and buildings at Holland has been transferred to Grand Rapids, and G. Y. Whitmee, foreman of water service, will have charge of water service on the entire Grand Rapids division, with office at Grand Rapids.

OBITUARY.

Thomas M. Fish, formerly general superintendent of the Detroit, Lansing & Northern, now part of the Pere Marquette, died on November 29. His funeral was held at Chicago.

James A. Millholland, formerly president and general manager of the Georges Creek & Cumberland Railroad until it was purchased by the Western Maryland, died in Cumberland, Md., on December 6. Mr. Millholland was born on December 8, 1842, at Baltimore, Md., and began his railway career in January, 1860.

Alden M. Young, a vice-president of the Albany Southern, died on December 3 at his home in New York City. Mr. Young was also a director in a large number of lighting and electric companies, and at one time was connected with the Connecticut Railway & Lighting Company, before it was taken over by New York, New Haven & Hartford.

Anrew O'Hara, division superintendent of the St. Louis & San Francisco, at Springfield, Mo., died on November 29. Mr. O'Hara was born in Ohio in 1857 and began railway work in 1872 as a telegraph operator. He was promoted to train despatcher and then to trainmaster of the Cleveland, Columbus, Cincinnati & Indianapolis, now a part of the Big Four. Since 1885 he has been in the service of the St. Louis & San Francisco Railway and its successor, the St. Louis & San Francisco Railroad, successively as train despatcher, trainmaster and division superintendent.

Frank M. Townsend, general agent of the Colorado Midland at Pittsburgh, Pa., died on November 25 at Bluefield, W. Va., at the age of 53 years. Death was due to typhoid pneumonia. Mr. Townsend began railway work at Indianapolis as agent of the Cleveland, Lorain & Wheeling, and was later yardmaster and then purchasing agent and superintendent of that road, now a division of the Baltimore & Ohio. Leaving this position, he became secretary and treasurer of La Colorado Gold Mining Company, Sonora, Mexico. Later he became identified with the Gulf Petroleum Company as traveling auditor, and for the past year Mr. Townsend had been general agent of the Colorado Midland.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

THE CALIFORNIA PLUMAS, Quincy, Cal., is in the market for 3 mogul locomotives or 3 ten-wheel locomotives.

THE QUANAH, ACME & PACIFIC has ordered 1 six-wheel switching locomotive from the Baldwin Locomotive Works.

THE GEORGIA RAILROAD has ordered 2 switching locomotives and 2 ten-wheel locomotives from the Baldwin Locomotive Works.

THE CHESAPEAKE & OHIO has ordered 1 mountain type passenger locomotive from the American Locomotive Company. The dimensions of the cylinders will be 29 in. x 28 in., the diameter of the driving wheels will be 62 in., and the total weight in working order will be 330,000 lbs.

THE LOURENCO MARQUES, Lourenco Marques, East Africa, has ordered 2 Mallet compound locomotives from the American Locomotive Company. The dimensions of the cylinders will be 17½ in., and 28 in. x 26 in., the diameter of the driving wheels will be 45½ in., and the total weight in working order will be 196,000 lbs.

CAR BUILDING.

THE PENNSYLVANIA RAILROAD is in the market for from 3,000 to 6,000 freight cars.

THE WESTERN LIVE STOCK EXPRESS COMPANY, Chicago, is in the market for 150 refrigerator cars.

THE CALIFORNIA PLUMAS, Quincy, Cal., is in the market for 30 flat cars, 10 box cars, 1 coach and 1 combination car.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 750 box cars from the American Car & Foundry Company.

THE LIVE POULTRY TRANSPORTATION COMPANY, Chicago, has ordered 150 poultry cars from the American Car & Foundry Company.

THE BERWIND-WHITE COAL MINING COMPANY, Philadelphia, Pa., has ordered 300 all-steel, 50-ton coal cars from the Cambria Steel Company.

THE KANSAS CITY SOUTHERN has ordered 8 chair cars, 5 baggage and express cars and 3 combination cars from the American Car & Foundry Company.

THE MISSOURI PACIFIC has ordered 1,000 gondola cars, 500 box cars, 500 automobile cars, and 500 furniture cars from the American Car & Foundry Company, and 500 box cars from the Standard Steel Car Company.

THE ALGOMA CENTRAL & HUDSON BAY has ordered 6 passenger cars, 2 baggage cars and 30 steel underframe box cars from the Canadian Car & Foundry Company. This company has also ordered 4 second-class passenger cars from the Preston Car & Coach Company.

THE CHICAGO & NORTH WESTERN has ordered 1,250 box cars from the Pullman Company; 1,250 box cars from the American Car & Foundry Company; 600 automobile cars from the Western Steel Car & Foundry Company, 500 flat cars from the Standard Steel Car Company, and is now in the market for 500 refrigerator cars.

IRON AND STEEL.

GENERAL CONDITIONS IN STEEL.—The action of the Steel Corporation in increasing the price of steel bars, following the announcement of a similar advance by the Republic Iron & Steel Company has been of great encouragement to steel manufacturers, for the earnings last month, in spite of the high production, are said to have been remarkably low. Rail inquiries are exceptionally large now, and, if they develop into orders, it is estimated that about 1,000,000 tons will be placed during the next six weeks. If prices were increased generally the situation would be very satisfactory, for incoming business is heavy. It is believed by many that the period of low prices is at an end, for the strain has been great on many of the independent companies.

Supply Trade News.

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, has received an order from the Canadian Pacific for a steel coal handling plant at Ft. William, Ont.

James Doyle, master car builder of the Pullman Company, Chicago, died in Detroit, Mich., on December 3, at the age of 57. He had been with the Pullman Company 36 years.

The Banks Electric & Manufacturing Company, New York, has made the North Western Construction Company, New York, its sole sales agent for the Banks track battery and the Banks signal battery.

Joseph F. Gettrust, for 16 years mechanical inspector of the Galena-Signal Oil Company, Franklin, Pa., has been made southern railway representative of the Ashton Valve Company, Boston, Mass., with office in Chicago.

The Biddle Hardware Company, Philadelphia, Pa., has opened a branch office at 150 Chambers street, New York. This office will be devoted to railway appliances, including the Burrows' ball-bearing jack. W. R. Burrows is manager.

The Vulcan Iron Works, Wilkesbarre, Pa., has received an order from Rodgers & Haggerty, Inc., New York, for three 20-ton, four-driver, saddle-tank locomotives. This company has also received an order from C. W. Blakeslee & Sons, New Haven, Conn., for one 30-ton, four-driver, saddle-tank locomotive with 13-in. x 18-in. cylinders; and an order from the Rockport Granite Company, Rockport, Mass., for one 35-ton four-driver, saddle tank, locomotive with 14-in. x 20-in. cylinders.

TRADE PUBLICATIONS.

CATTLE GUARDS.—The National Surface Guards Company, Chicago, has issued a booklet giving illustrations and descriptions of the National surface stock guards.

DIGGING MACHINERY.—The Hayward Company, New York, has issued pamphlet No. 577, containing photographs of its clam shell, orange peel and drag scraper buckets in operation where the work is exceptionally heavy.

EXPANDERS.—Gustav Wiedeke & Company, Dayton, Ohio, have published an illustrated booklet on their expanders for locomotive boilers. Each type of expander is illustrated and tables are given which show prices, sizes and code words for ordering.

COUPLERS.—The National Malleable Castings Company, Cleveland, Ohio, has published catalog No. 2 on Sharon, Tower, Climax, Latrobe and Chicago couplers and repair parts for freight, passenger, engine and tender service. Excellent diagrams are given of each type of couplers, and also of each repair part. Catalog numbers for ordering are included.

VALVES.—The Nelson Valve Company, Philadelphia, Pa., has published a small folder on Nelson blow-off valves. These valves are made of iron for working pressure up to 300 lbs., and of steel for extreme service. They are described in detail and illustrations and diagrams are supplied to amplify the descriptions. Price lists and dimension tables are included.

GALVANIZED SHEETS.—The Inland Steel Company, Chicago, has issued an illustrated booklet entitled The Story of an Inland Galvanized Sheet, giving a complete description of the various processes entering into the manufacture of an open hearth galvanized sheet, from the mining of the iron ore to the output of the finished product, with illustrations of the principal stages in its manufacture. This company has also published a small booklet describing Vismera sheets.

FIREPROOF PRODUCTS.—The Dahlstrom Metallic Door Company, Jamestown, N. Y., has published in a small pamphlet the address of Edward F. Croker, ex-fire chief of the New York fire department, at the International Municipal Congress and Exposition, held in Chicago, September 29, 1911. This address was on the Reduction of Fire Waste, and made a strong appeal for fireproof construction in both public and private buildings. The pamphlet ends with a brief description of the fireproof qualities of Dahlstrom products.

Railway Construction.

New Incorporations, Surveys, Etc.

Atchison, Topeka & Santa Fe.—An officer of the Dodge City & Cimarron Valley writes that this company has been incorporated with $3,600,000 capital, to build 180 miles of railway. The plans call for a line from Dodge City, Kan., southwest to Colmor, N. M., and a branch may be built in a northerly direction to the west line of the state. Right of way has been secured and it is the intention to start work at once on the 58 miles from Dodge City to the southwest corner of Haskell county through Ford, Gray and Haskell counties. The surveys will be continued through Grant, Stevens and Morton counties, Kan.; and probably through the southwestern part of Colorado, thence into New Mexico to a connection with the main line at Colmor. On the completion of the track-laying the line will probably be operated as a part of a division of the Santa Fe. E. L. Copeland, secretary and treasurer, Topeka, Kan.

California Plumas Railway.—This company has been incorporated in California, with headquarters at Quincy, to build a 27-mile line from a point on the Western Pacific, near Twain via Greenville, to Nevis. It is estimated that it will cost about $650,000 to build the line. H. C. Flournoy, president; G. H. Stephan, vice-president; W. J. Miller, secretary; A. C. Berg, treasurer, and E. M. Camaron, chief engineer. J. E. Sexton of Quincy is interested in the project.

Canada & Gulf Terminal.—An officer writes that an extension is projected from Matane, Que., to Gaspe Basin, 189 miles. J. R. Cassidy, superintendent, Ste. Flavie.

Canadian Northern Quebec.—An officer writes that surveys are being made from St. Eustache, Que., to St. Jerome, 16 miles; also from St. Justin to St. Stanislas, 60 miles. H. K. Wicksteed, chief engineer, Toronto, Ont.

Canadian Pacific.—An officer writes that work is now under way on lines as follows: In Manitoba—Tilston boundary line, 3.2 miles; between Virden and McAuley, 23 miles; Lauder and Boissevain, 36 miles. In Saskatchewan—Between Estevan and Forward, 55 miles; Wilkie southeast, 35 miles; Kerrobert northeast, 25 miles; Weyburn west, 2.2 miles; Tilston west, 21 miles; Moose Jaw northwest, 8 miles. In Alberta—Coronation easterly, 39 miles; between Bassano and Irricana, 36 miles. In British Columbia—Port Moody spur, 3 miles; between Jukeson and Fort Steele, 15.8 miles; Fort Steele north, 21 miles; Golden south, 42 miles; between Three Forks and McGuigan, 3 miles. Total, 368.2 miles. J. G. Sullivan, chief engineer, Winnipeg, Man.

Cape Charles.—See New York, Philadelphia & Norfolk.

Carolina, Clinchfield & Ohio.—An officer writes that surveys have been made for an extension from Laurel Junction or Dante, Va., to Elkhorn City, Ky., 33 miles. M. J. Caples, vice-president and general manager, Johnson City, Tenn.

Central Idaho Railroad.—See Oregon Short Line.

Chehalis & Cowlitz River.—An officer writes that this company is building from Chehalis, Wash., to Cowlitz river, 20 miles, and has track laid on 7.25 miles from Chehalis southeasterly to Newaukum prairie. H. C. Coffman, president, Chehalis. (June 9, p. 1333.)

Chicago & Wisconsin Valley (Electric).—An officer writes that this company has finished work from the city of Portagrand, Wis., to Madison, 6 miles, and has work under way from Merrill towards Janesville, 276 miles. The Western Indiana Construction Company, Madison, are the contractors. Surveys are under way from Portage to Merrill, 130 miles. (January 6, p. 62.)

Chicago, Indianapolis & Louisville.—An officer writes that a contract has been given to Thomas H. Glynn, Terre Haute, Ind., to build from Midland to Lattas Creek, 4.50 miles. A. S. Kent, chief engineer, Chicago, Ill.

Chicago, Rock Island & Pacific.—An officer writes that contracts have been given to the C. H. Sharp Contracting Company, Kansas City, Mo., to build from Malvern, Ark., to Camden, 58.85 miles, and to MacArthur Brothers Company, Chicago, Ill., to build from Carlisle, La., to Allerton, 64.76 miles. J. B. Berry, chief engineer, Chicago, Ill.

Cincinnati, New Orleans & Texas Pacific.—An officer writes that work is now under way by the Mason & Hanger Company, Richmond, Ky., between Oakdale, Tenn., and Lancing, 14 miles. C. Dougherty, chief engineer, Cincinnati, Ohio.

Copper River & Northwestern.—An officer writes that surveys are now being made from Strelna, Alaska, to Copper mountain, 18.8 miles; also from McCarthy to Mother Lode mine, 13 miles, and from McCarthy to Skolai Pass, 64 miles. E. C. Hawkins, chief engineer, Seattle, Wash.

Cullman Coal & Coke.—This company has projected an 18-mile extension from Ryan's Creek, Ala., to Julianna. J. W. Jones, chief engineer, Cullman.

Dodge City & Cimarron Valley.—See Atchison, Topeka & Santa Fe.

Detroit & Mackinac.—An officer writes that work is now under way building an extension from Calcite, Mich., to Rogers City, 3 miles. The company is carrying out the work with its own forces. J. D. Hawks, vice-president and general manager, Detroit.

Eastern Maine.—An officer writes that surveys are being made for an extension from Bangor, Me., to Houlton, 108 miles. F. O. Beal, treasurer, Bangor.

Florida East Coast.—An officer writes that work is now under way by the Kissimmee Valley Construction Company, Jacksonville, Fla., between Maytown and Tantie, on 125 miles. E. Ben Carter, superintendent maintenance of way, St. Augustine.

Fort Worth & Rio Grande.—See St. Louis & San Francisco.

Garden City, Gulf & Northern.—An officer of the Scott City Northern writes that an extension is projected from Winona, Kan., to St. Frances, 60 miles. C. F. W. Felt, chief engineer, Topeka.

Grand Trunk Pacific.—An officer of the National Transcontinental Railway writes that construction work is now under way between Moncton, N. B., and the New Brunswick-Quebec boundary on 6 miles, thence west of that point to the Quebec bridge on 63 miles; also from the Quebec bridge to the Quebec-Ontario boundary on 162 miles, and from the Quebec-Ontario boundary to the Ontario-Manitoba boundary on 259 miles; a total of 490 miles. The contractors are as follows: Grand Trunk Pacific Construction Company, Montreal, Que., Districts A-1, 3, 4, B-11, C-14 and D-14; J. W. McManus & Co., Ltd., Chipman, N. B., District A-2; W. Kitchen Company, Ltd., Grand Falls, N. B., District A-5; Lyons & White, Edmundston, N. B., District A-6; M. P. & J. T. Davis, Quebec, Que., Districts B-7, 8 (east), 9 (west), D-16, E-16 and 17; Macdonnell & O'Brien, Montreal, Que., Districts B-10, C-12 and 13; E. F. & G. E. Fauquier Brothers, Ottawa, Ont., Districts D-15 and E-18; O'Brien, Fowler & MacDougall Brothers, Dryden, Ont., Districts E-19, F-19 and 20; J. D. McArthur, Winnipeg, Man., District F-21. G. Grant, chief engineer, Ottawa, Ont.

Hawkinsville & Western.—An officer writes that work is now under way from Grovania, Ga., to Perry, 8 miles. E. M. Becham, Hawkinsville, and J. F. Lamb, Thomasville, are the contractors. J. J. Gaillard, chief engineer, Hawkinsville.

Idaho & Washington Northern.—An officer writes that surveys have been made to build a branch from Ione, Wash., west to Cronin, 17 miles. W. C. Smith, chief engineer, Spirit Lake, Idaho.

Kansas City, Mexico & Orient.—An officer writes that work is now under way by Roach & Stansell, Memphis, Tenn., on 97 miles between Granada, Tex., and Alpine. W. W. Colpitts, chief engineer, Kansas City, Mo.

Lake Superior & Ishpeming.—An officer writes that grading has been finished by Gust Fredun, Norway, Mich., on a branch to the Negaunee mines at Negaunee, 2 miles. R. C. Young, chief engineer, Marquette.

Lehigh & New England.—An officer writes that work is now under way by McArthur Brothers Company on an extension from Danielsville, Pa., to Tamaqua, 32.3 miles. F. W. Gilcreast, chief engineer, Mauch Chunk.

LOUISIANA & ARKANSAS.—An officer writes that work is now under way on an extension from Jena, La., to Jonesville, 22.5 miles. M. Tansey, Jena, general contractor. The Union Bridge & Construction Company, Kansas City, Mo., has the contract for the steel work. Surveys are being made for an extension from Jonesville, La., to Vidalia, 24.4 miles. W. H. Vance, engineer maintenance way, Stamps, Ark.

MARYLAND-VIRGINIA.—Incorporated in Virginia with $1,000,000 capital to build through the counties of Alexandria, Fairfax and Prince William. Alexander Suter, president; S. L. Monroe, vice-president; G. M. Lewis, secretary and treasurer. N. Garner, G. L. Booth, J. R. Caton and R. B. Washington, all of Alexandria, are incorporators.

MEMPHIS, ARKANSAS & LOUISIANA.—This company has filed articles of corporation in Louisiana with authorized capital stock of $25,000,000. The president of the company is B. L. Winchell, president of the St. Louis & San Francisco, and it is said that the new company has been formed with a view to building a Gulf coast connection for the Frisco. A proposed arrangement for such a connection over the Texas & Pacific, involving the making of important improvements on the T. & P., fell through about a month ago, because of disagreement as to details. The company now formed describes its line as running from Port Barre, La., on the New Orleans, Texas & Mexico northward 375 miles through Louisiana and Arkansas to a connection with the Frisco.

MEMPHIS, DALLAS & GULF.—An officer writes that work is now under way by T. H. Sater & Bro., Murfreesboro, Ark.; Jack Thorne, Leard, and W. J. Murphy, Glenwood, on the following sections: Murfreesboro to Dunlap Junction, 18 miles; Brown to Shawmut, 12 miles; Rosboro Junction to Glenwood, 3 miles; Loewenberg to Hot Springs, 15 miles; and surveys are under way from Standing to Arkadelphia, 16 miles; also from Dalark to Pine Bluff, 61 miles. The company's plans call for an extension from Ashdown, Ark., southwest to Dallas, Tex., 170 miles. A. M. Van Auken, chief engineer, Nashville, Ark. (September 15, p. 544.)

MEXICAN UNION.—An officer writes that work is now under way by the Railway Finance & Construction Company, 130 Dashwood House, London, E. C., England, on an extension from Santa Rosalia, Sonora, Mex., north to Ures, 32 miles. H. R. Wagner, vice-president, Mexico, Mex.

MISSOURI PACIFIC.—An officer writes that work is now under way from Marianna, Ark., to West Memphis on 45.87 miles. List & Gifford Construction Company and the Kansas City Bridge Company, both of Kansas City, Mo., are the contractors. E. F. Mitchell, chief engineer, St. Louis.

MOUNT AIRY & EASTERN.—An officer writes that a preliminary survey has been made from Mt. Airy, N. C., to Philpott, Va., 60 miles. J. T. Heare, superintendent, Mt. Airy.

NATIONAL RAILWAYS OF MEXICO.—The report of this company for the year ended June 30, 1911, shows that the most important work under way during the year was on the two lines as follows: To connect the city of Durango with the station of Canitas on the main line of the old Mexican Central, in the states of Durango and Zacatecas, Mex., about 170 miles, with a branch about eight miles to Sombrerete, and the line from Penjamo on the Guadalajara division to Ajuno on the Uruapan branch, in the states of Guanajuato and Michoacan, about 85 miles. The change from narrow to standard gage on the line from Acambaro to Uruapan, about 145 miles, was carried out during the year and the line has been opened for operation. The work included the construction of thirty-nine miles of new line between Acambaro and Patzcuaro, to reduce the grades and curvature and shorten the distance. Work on the new line from Durango to Llano-Grande, was continued, and grading and masonary work is finished on about 90 per cent., it is expected that the first twelve miles will be opened for operation during 1911. A large amount of heavy rail was laid to replace lighter sections at various places, and much bridge renewal work was carried out during the year.

NATIONAL TRANSCONTINENTAL RAILWAY.—See Grand Trunk Pacific.

NEW ORLEANS GREAT NORTHERN.—An officer writes that surveys are now being made between Nogan, Miss., and Jackson on 6.6 miles. C. R. Howard, chief engineer, Bogalusa, La.

NEW ORLEANS, TEXAS & MEXICO.—See St. Louis & San Francisco.

NEW YORK, PHILADELPHIA & NORFOLK.—An officer writes that during 1911 this company built a short section of second track and put in some new sidings. The Cape Charles Railroad has under construction an extension of 3.39 miles, which will probably be finished by March, 1912. W. A. Patton, president, Philadelphia, Pa.

NORTHWESTERN PACIFIC.—An officer writes that work is now under way by the Utah Construction Company and Willett & Burr, both of San Francisco, Cal., on 31.7 miles, between Willits and Shively, and surveys have been completed on an additional 47 miles between these two places, also between Healdsburg and Christine, 62 miles. W. C. Edes, chief engineer, 1262 Flood building, San Francisco, Cal.

NORTH YAKIMA & VALLEY.—An officer writes that surveys have been made for an extension to Tieton, Wash., in the Cowiche valley, 12 miles. Geo. Donald, general manager, North Yakima.

OCEAN SHORE.—An officer writes that grading work is partly finished between Tunitas, Cal., and Pescadora on 10 miles. L. H. Landis, general manager, San Francisco.

OCILLA SOUTHERN.—An officer writes that work is now under way by R. S. Talmadge, Nashville, Ga., and E. E. Bailey, Fitzgerald, building an extension from Abba to Rochelle, 15 miles. J. A. J. Henderson, president and general manager, Ocilla.

OMAHA, SIOUX CITY & NORTHERN.—An officer writes that the line has been located and work is now under way by the Kansas Construction & Irrigation Company, Garden City, Kan., from Tekamah, Neb., to Decatur, 20 miles. E. A. Tennis, vice-president, Garden City, Kan.

OREGON SHORT LINE.—An officer writes that work is now under way from Judkins, Idaho, to Driggs, 15.16 miles, and from Nyssa, Ore., to Homedale, Idaho, 25.26 miles. The Central Idaho is building an extension from Wood River, Idaho, to Taft, 38.90 miles, and the Salt Lake & Idaho is building from Burley, Idaho, to Strevell, 60.29 miles. The Utah Construction Company, Ogden, Utah, has contracts for all the work. W. H. Bancroft, vice-president and general manager, Salt Lake City.

PITTSBURGH & SUSQUEHANNA.—An officer writes that work is now under way building an extension of 1.75 miles from East Moshanonton, Pa., to the car shops, and surveys are being made from Waltzvale to Heilners, 17 miles. J. W. Cleveland, chief engineer, Philipsburg, Pa.

PORT BOLIVAR IRON ORE.—An officer writes that surveys are being made to build an extension from Ore City, Tex., to Clarksville, 70 miles. Lewis L. Featherstone, secretary, Longview.

QUEBEC & SAGUENAY.—An officer writes that a contract has been given to O'Brien & Doheny, Quebec, and work is now under way on a 73-mile line from a point 30 miles northeast of Quebec, Que., northeast along the north shore of the St. Lawrence river. An extension is projected from Mile-73 northeast. Arthur H. N. Bruce, chief engineer, 85 Dalhousie street, Quebec.

ST. LOUIS & SAN FRANCISCO.—The report of this company for the year ended June 30, 1911, shows that during the year the Marion-Hurlbut cut-off in Arkansas 5.49 miles was put in operation. The Fort Worth & Rio Grande was extended from Whiteland, Tex., to Menard, 27.56 miles, and is now in operation. During the year 48.18 miles of new industrial and side tracks were constructed. There was an increase of 38.35 miles in main track mileage on the New Orleans, Texas & Mexico, and an increase of 23.56 miles, side-track mileage.

See Memphis, Arkansas & Louisiana.

SALT LAKE & IDAHO.—See Oregon Short Line.

SCOTT CITY NORTHERN.—See Garden City, Gulf & Northern.

SEATTLE & EASTERN.—See Washington Roads.

SEATTLE & OLYMPIC PENINSULA.—See Washington Roads.

SYDNEY & LOUISBURG.—An officer writes that this company is making surveys to build from Summit. N. S.. to Colliery No. 17 1.5 miles. M. J. Butler, vice-president and general manager, Sydney.

Tampa & Jacksonville.—An officer writes that this company will probably build an extension from Blichton, Fla., to Ocala during 1912. A. L. Glass, general manager, Gainesville, Fla.

Texas, Kansas & Oklahoma.—Incorporated in Texas with $100,000 capital to build about 100 miles of railway through Potter, Moore and Sherman counties, Texas, thence to Texahoma, in Oklahoma. The general offices of the company are at Amarillo, Tex. The incorporators include F. T. Burnhaw, Kansas City, Mo.; C. T. Herring, R. E. Underwood, M. C. Linmaster, Amarillo, Tex., and J. T. Williams, Texahoma, Okla.

The A. & A. Short Line (Electric).—An officer writes that grading work is now under way from Alliance, Ohio, to Akron. Marasco & Serianni are the general contractors. L. C. Marble, chief engineer, Cleveland, Ohio.

Thornton & Alexandria.—An officer writes that reconstruction work is now under way straightening the old line at Big Hill, Ark., on one mile; also at Rock Island Junction on 1.25 miles. J. H. Beland, general manager, Thornton.

Washington Roads.—Articles of incorporation of two railways, both on Puget Sound, have been filed in the state of Washington. The Seattle & Olympic Peninsula is to be built from Port Townsend or Port Ludlow, or both, to Port Angeles, and thence westerly to Lake Crescent. The Seattle & Eastern Railway Company is to build from "some convenient point on the east shore of Lake Washington to Issaquah, about 15 miles. The incorporators and trustees of the Seattle & Olympic Peninsula are Michael Earles, Seattle, and J. A. Kerr, both of Seattle, and Thomas T. Aldwell, Port Angeles. The principal office is at Seattle, and the capital stock is $5,000,000. The incorporators of the Seattle & Eastern are R. S. Terhune, G. F. Aust, A. Schramm, A. Schramm, Jr., W. K. Keene, O. H. Springer and C. D. Folger. The offices of the company will be at Seattle, and the capital stock is $1,500,000.

Watanga Railway.—This company's plans call for building a 91-mile line in North Carolina and eastern Tennesse, on which work is to be started at once. A. C. Landon is general manager and chief engineer, with headquarters at Lenoir, N. C.

RAILWAY STRUCTURES.

Cincinnati, Ohio.—An ordinance for the Cincinnati union depot was submitted to the city council on December 3 for final approval. According to the plans, the estimated cost of the improvements is $36,000,000. The work includes a large terminal office building, a new four-track entrance to the city, and an elevated approach reducing the mileage and grades.

East Hutchinson, Kansas.—The Atchison, Topeka & Santa Fe is contemplating building a twelve-stall roundhouse.

Jacksonville, Fla.—According to press reports the Seaboard Air Line will begin work soon on the terminal improvements at the foot of Hovan street, Jacksonville. It is understood that the work calls for the construction of two warehouses and some other structures. (June 23, p. 1675.)

Gary, Ind.—An officer of the New York Central lines writes, regarding the report that work is to be started soon on a large yard east of Gary, that land has been bought for a yard. It is likely that construction work will begin in the near future, but definite plans have not yet been decided upon.

Minot, N. Dak.—The Minneapolis, St. Paul & Sault Ste. Marie has let the contract for building a one- and two-story passenger station 250 ft. x 56 ft. The main building will be 56 ft. x 90 ft., the baggage and express rooms 75 ft. x 35 ft., and the covered way 80 ft. x 35 ft. The structure will be of fireproof construction.

New York.—Bids will be asked for soon for the erection of the new Manhattan station of the Brooklyn bridge. This work has been approved by the Board of Estimate. The connections with the subway, the Brooklyn bridge, Municipal building and the Third Avenue Elevated will cost $500,000. The total cost of the improvements will be $2,500,000.

Tacoma, Wash.—The Puget Sound Electric will build a new passenger station at Eighth street. The structure is to be four stories high.

Railway Financial News.

Delaware, Lackawanna & Western.—At the annual meeting of the Syracuse, Binghamton & New York, it was voted to lease the road, formerly an independent line paying 10 per cent., to the Delaware, Lackawanna & Western for 12 per cent as rental. The Lackawanna owns about 80 per cent. of the stock.

International & Great Northern.—The temporary directors, who were W. H. Cope, of New Orleans; W. L. Maury, of Houston, Tex.; Milton L. Morris, of Houston; Horace Booth, of Houston; Frank R. Richardson, of New Orleans; D. J. Price, of Houston, and S. Dabney, of Houston, have retired, and the board of directors now consists of Frank J. Gould, George J. Gould, R. Lancaster Williams, Walter K. Morrow, F. W. Cook, J. H. Jones, Henry Martin, A. R. Howard and Thomas J. Freeman. Frank J. Gould is chairman of the board, and Frank J. Gould, George J. Gould and R. Lancaster Williams are the executive committee.

Iowa Central.—Directors of the Minneapolis & St. Louis and of the Iowa Central have approved the plan of the lease of the Iowa Central to the Minneapolis & St. Louis. J. S. Bache & Co., New York, have, it is understood, agreed to underwrite an issue of $2,500,000 5 per cent. bonds of the Minneapolis & St. Louis to provide for the retirement of securities of the Minneapolis, Dakota & Pacific, which is the name of the western extension of the Minneapolis & St. Louis. (November 10, p. 975.)

Jamestown, Chautauqua & Lake Erie.—George Bullock has been appointed receiver of this company, of the Jamestown & Chautauqua Railway and the Chautauqua Steamboat Company.

Minneapolis & St. Louis.—See Iowa Central.

Missouri, Kansas & Texas.—See an item in Court News.

St. Louis & San Francisco.—Speyer & Co., New York, have bought from the railway company $2,553,000 general lien 15-20 year 5 per cent. bonds. The bankers are offering these bonds at 89, at which price they yield 6⅛ per cent.

Seaboard Company.—This company has sold to a syndicate headed by Blair & Co., and Ladenburg, Thalmann & Co., New York, $6,700,000 Seaboard Air Line Railway adjustment mortgage 5 per cent. bonds, and has sold to the bankers for their own account $85,900, the remainder of these bonds heretofore held by the Seaboard Company. The Seaboard Company's assets consist of Seaboard Air Line Railway Company common and preferred stock, the bonds mentioned above, and $900,000 Seaboard Air Line Railway demand notes. A special meeting of stockholders has been called for January 3 to vote on the question of dissolving the Seaboard Company and distributing the railway company's stock to holding company stockholders. The charter of the Seaboard Company provides for the distribution to its common stockholders of the common stock of the railway at the rate of about 1.03 shares of railway stock per share of Seaboard stock; the distribution of about 1.33 shares of railway preferred stock to each share of second preferred Seaboard stock, and all the other assets pro rata to Seaboard Company's first preferred stockholders. The cash received from the sale of the bonds mentioned above and to be received from the redemption of the demand notes will provide, it is estimated, par in cash for the first preferred stockholders.

Wabash.—See editorial pages for comments on the election of new directors.

See also Wheeling & Lake Erie.

Wheeling & Lake Erie.—A new minority stockholders' committee has been formed, consisting of Joseph Ramsey, Jr., Ralph E. Slavens, the firms of Werse & Diekman and J. & J. Taussig. In a circular sent to minority stockholders the new committee calls attention to the progress made by the Wheeling & Lake Erie under the receivership and says that, in their opinion, the Wheeling & Lake Erie is solvent and perfectly able to carry on its obligations. They claim that a proposed assessment of $25 per share is more than would be necessary to reorganize the Wheeling & Lake Erie itself.

ANNUAL REPORTS

FIFTEENTH ANNUAL REPORT OF THE ST. LOUIS AND SAN FRANCISCO RAILROAD COMPANY.

To the Stockholders:

The Directors herewith submit their report of the operations and affairs of the St. Louis and San Francisco Railroad Company for the fiscal year ended June 30th, 1911.

The results of operation for the fiscal year were as follows:

Operating revenue (increase $1,993,288.32 or 4.8 per cent.)		$43,159,227.69
Operating expenses (increase $643,557.81 or 2.2 per cent.)		29,320,400.00
Net operating revenue (increase $1,349,730.51 or 10.8 per cent.)		$13,838,827.69
Taxes		1,811,827.15
		$12,027,000.54
Miscellaneous income		2,333,970.73
Total income		$14,360,971.27
Interest, rentals and other fixed charges		12,825,567.17
Net income after providing for all charges		$1,535,404.10
Dividends paid—four per cent. on first preferred stock		199,742.12
Surplus carried to profit and loss		$1,335,661.98

The increase in the average mileage operated during the year as compared with the preceding year was 116.14 miles, or 2.3%.

The main track mileage at June 30, 1911, was	5,227.37 miles
The main track mileage at June 30, 1910, was	5,071.54 miles
Showing an increase of	155.83 miles

This increase is explained as follows:

MILEAGE CONSTRUCTED.

Extension Whiteland, Texas, to Menard, Texas	27.56 miles
Marion-Hulbert Cut-off, Arkansas	5.49 miles

TRACKAGE UNDER CONTRACT.

Brady, Texas, to Whiteland, Texas	11.78 miles
Irving, Texas, to Dallas, Texas	10.50 miles
Dallas, Texas, to Paris, Texas	100.50 miles
Total increase	155.83 miles

On pages 76, 77 and 78 will be found details of the mileage of all the Lines operated, owned or controlled, by this Company.

CAPITAL STOCK.

There was no change during the year in the Company's Capital Stock issued or outstanding.

FUNDED DEBT AND EQUIPMENT BONDS AND NOTES.

The outstanding funded debt at June 30, 1911, was	$228,924,224.68	
The outstanding equipment trust bonds and notes were	14,498,491.59	
Total		$243,422,716.27
The outstanding funded debt at June 30, 1910, was	$221,966,174.11	
The outstanding equipment trust bonds and notes were	15,700,521.79	
Total		$237,666.695.90
The net increase for the year was		$5,756,020.37

Statements on pages 21 and 22 give in detail the changes in funded debt and equipment notes.

EQUIPMENT.

The following equipment was purchased during the year:

1. Under Trust Agreements:
   - 25 Consolidation Locomotives.
   - 5 Pacific Type Locomotives.
   - 10 Switching Locomotives.
   - 6 Ten-Wheel Locomotives.
   - 7 Mallet Locomotives.
   - 2 Observation Cafe Cars.
   - 3 Steel Underframe Combination Passenger and Mail Cars.
   - 2 Steel Underframe Baggage Cars.
   - 4 Steel Underframe Coaches.
   - 6 Gasoline-Electric Motor Cars.
   - 250 Steel Frame Automobile and Furniture Box Cars.
   - 25 Express Refrigerator Cars.
2. Under Lease and Purchase Agreement:
   - 500 Steel Frame Box Cars.
   - 300 Steel Frame Automobile and Furniture Box Cars.
   - 250 Steel Tank Cars.
   - 500 Steel Frame Stock Dump Cars.
3. Purchased for cash:
   - 2 Brown Hoists,
   - 1 Ballast Spreader,
   - 1 Boarding Car,
   - 4 Box Cars,
   - 1 Coal Car,
   - 1 Commissary Car,
   - 2 Flat Cars,
   - 2 Official Cars,
   - 1 Refrigerator Car,
   - 2 Scale Test Cars,
   - 6 Stock Cars,

   (Built at Company's Shops.)

All of this additional equipment was received at June 30, 1911, with the exception of the six Gasoline-Electric Motor Cars and two Observation Cafe Cars.

On pages 40 and 41 of this report will be found statements showing the number of each class of equipment owned and leased.

CONSTRUCTION.

Reference was made in last year's report to the completion of the Marion-Hulbert Cut-off in that year—5.49 miles—but the track was not put in operation until July 1st, 1911. The track is, by agreement, being operated jointly with the Chicago, Rock Island & Pacific Railway Company.

The Fort Worth & Rio Grande Railway was extended during the year from Whiteland, Tex., to Menard, Tex., 27.56 miles, and put in operation February 25th, 1911. This new track is laid with 60-pound steel rail and 3,000 cross ties to the mile. The maximum gradient is 0.75 per cent. and the maximum curvature 3 degrees.

TRACKAGE.

Agreements were made during the year with the Gulf, Colorado & Santa Fe Railway Company for the joint use of 11.78 miles of track between Brady and Whiteland, Tex., and for joint use of 100.50 miles between Dallas and Paris, Tex.; also with the Chicago, Rock Island & Gulf Railway Company for the joint use of 10.50 miles of track between Irving and Dallas, Tex.

NEW ORLEANS, TEXAS & MEXICO RAILROAD COMPANY.

This property was operated, and its accounts kept, separately.

Its outstanding funded debt at June 30, 1911, was $26,000,000, and outstanding equipment trust notes, $1,176,596.54.

The gross operating revenue for the fiscal year was $3,737,716.32.

Political conditions in Mexico prevented the expected interchange of traffic via the Brownsville gateway, and unforeseen delays in the completion of necessary ballast and other construction work prevented through passenger train service from being undertaken until near the close of the fiscal year (June 18th). For these reasons this line could not be considered as in full operation until that time. In addition to interest on its indebtedness, the Company paid $254,148.37 in rentals, leaving a deficit for the year of $943,392.14, which for the reasons stated, has been included in the cost of the property.

The increase in its main track mileage for the year was 38.35 miles, and in side track mileage, 23.56 miles. See page 78 for details of mileage of this line.

(This line extends from New Orleans through Houston to Brownsville, Texas, on the Mexican border, and is now operating 976.72 miles, including 183.84 miles under trackage rights.

Its strength is demonstrated by the noticeable development of traffic since the close of the fiscal year, gross earnings for three months ended September 30th, 1911, showing an increase of $219,640, or 26 per cent. over the same period in 1910.

The acreage planted in cotton in 1911, tributary to the Brownsville Line, was considerably more than double that planted in 1910. Shipments of cotton from the Rio Grande Valley in July were 6,000 bales, against 700 bales last year.

Shipments of sugar will commence by December 1st, and the increased acreage planted indicates a large increase in the movement of this commodity. It is expected that Louisiana will have the largest sugar cane crop in its history, and the present high price for sugar should result in very favorable conditions for that State.

There has been a marked increase in population along the line during the year. The settlers are principally farmers of means from the older agricultural districts and foreign countries who adopt the most improved methods.

The property is well constructed and in good operating condition. It has a low grade, permitting of handling traffic promptly and economically. The terminal facilities are excellent, especially at New Orleans, Baton Rouge, Beaumont and Houston.

To take care of the increased traffic additional equipment has already been contracted).

GENERAL.

The property of your company has been well maintained during the year, expenditures for Maintenance of Way having been at the rate of $1,054.40 per mile operated; for repairs of locomotives, $2,671.69 per engine owned; for repairs of freight cars, $62.79 each and of passenger cars, $727.76 each.

The percentage of locomotives in shop or awaiting repairs decreased 1.5, and the percentage of bad order freight cars decreased 3.05, as compared with conditions at the close of the previous fiscal year.

Increased rates of pay caused increased costs per train mile and per traffic unit mile for engine, train, yard and station service.

While freight revenue increased 1.5 per cent., freight train miles decreased 4.7 per cent., and freight revenue per train mile increased 6.4 per cent.

Passenger train revenue increased 11.3 per cent., with an accompanying increase in passenger train miles of only 4.7 per cent.

The gross revenue per mile of road—$8,319.16—is the highest in the history of the Company.

Two hundred and seventy-six industrial plants, costing approximately $6,400,000 and employing over six thousand men were located on the company's tracks during the fiscal year. It is estimated by the Industrial department of the company that the tonnage producing capacity of these plants will exceed fifty-nine thousand carloads per annum.

Forty-eight and eighteen-hundredths miles of new industrial and side tracks were constructed during the year.

The usual consolidated statements showing the balance sheet, income and profit and loss accounts and statistical data including the figures of the Chicago & Eastern Illinois Railroad Company, will be found on pages 46 to 78. These statements are in forms prescribed by the Interstate Commerce Commission.

Thanks are due to officers and employes whose loyal service is heartily appreciated.

By order of the Board of Directors.

B. L. WINCHELL,
President.

October 2nd, 1911.

ST. LOUIS AND SAN FRANCISCO RAILROAD LINES.
GENERAL PROFIT AND LOSS ACCOUNT AND ADJUSTMENTS THEREIN,
JUNE 30TH, 1910, TO JUNE 30TH, 1911.

CREDIT.

Balance at credit, as per annual report June 30th, 1910	$4,394,606.23	
Surplus for the year ended June 30th, 1911	1,335,661.98	
TOTAL CREDIT		$5,730,268.21

DEBIT.

Proportion for the year of discount on securities sold	$802,253.01	
Sundry adjustments not affecting current year's income	94,805.32	
TOTAL DEBIT		$897,058.33
Balance		4,833,209.88
		$5,730,268.21
By Balance at credit, June 30th, 1911		$4,833,209.88

ST. LOUIS AND SAN FRANCISCO RAILROAD LINES.
INCOME ACCOUNT.
FISCAL YEAR ENDED JUNE 30TH, 1911, COMPARED WITH PREVIOUS YEAR.

	1910-11.	1909-10.	Increase or Decrease. Amount.	Per Cent.
Average mileage operated...	5,187.93	5,071.79	116.14	2.3
Operating revenue—				
Freight	$28,071,781.86	$27,645,863.48	$425,918.38	1.5
Passenger	11,999,385.31	10,548,969.83	1,450,415.48	13.7
Mail	1,010,218.61	1,009,241.56	977.05	0.1
Express	1,120,194.06	1,134,904.37	—14,710.31	1.3
Miscellaneous	650,047.02	550,811.88	99,235.14	18.2
Total transportation revenue	$42,851,626.86	$40,889,791.12	$1,961,835.74	4.8
Revenue from operation other than transportation	307,600.83	276,148.25	31,452.58	11.4
Total operating revenue.	$43,159,227.69	$41,165,939.37	$1,993,288.32	4.8
Operating Expenses—				
Maintenance of way and structures	$5,470,178.59	$5,778,268.15	—$308,089.56	5.3
Maintenance of equipment	5,738,290.32	5,940,310.37	—202,020.05	3.4
Traffic expenses	1,085,846.84	1,036,821.23	49,025.61	4.7
Transportation expenses...	15,737,164.89	14,698,094.38	1,039,070.51	7.1
General expenses	1,288,919.36	1,223,348.06	65,571.30	5.4
Total operating expenses.	$29,320,400.00	$28,676,842.19	$643,557.81	2.2
Net operating revenue	$13,838,827.69	$12,489,097.18	$1,349,730.51	10.8
Taxes	1,811,827.15	1,458,185.96	353,641.19	24.3
Operating income	$12,027,000.54	$11,030,911.22	$996,089.32	9.0
Miscellaneous income—				
Hire of equipment	*$323,640.85*	*$609,988.27*	$286,347.42	46.9
Other income	2,657,611.58	2,910,416.99	—252,805.41	8.7
Total miscellaneous income	$2,333,970.73	$2,300,428.72	$33,542.01	1.5
Total income	$14,360,971.27	$13,331,339.94	$1,029,631.33	7.7
Interest	$7,850,606.63	$7,447,805.63	$402,801.00	5.4
Rentals and sinking funds—				
Interest on guaranteed securities	2,604,038.36	2,594,390.91	9,647.45	0.4
Other rentals and sinking funds	836,040.18	627,302.23	208,737.95	33.3
Dividends on trust certificates, The Kansas City, Ft. Scott & Memphis Railway	540,400.00	540,400.00	.....	...
Dividends on trust certificates, Chicago & Eastern Illinois Railroad	994,482.00	999,482.00	—5,000.00	0.5
Total charges	$12,825,567.17	$12,209,380.77	$616,186.40	5.0
Available for dividends.	$1,535,404.10	$1,121,959.17	$413,444.93	36.9
Dividends—				
Four per cent. on first preferred stock	199,742.12	199,742.12	.....	...
Surplus carried to credit of profit and loss	$1,335,661.98	$922,217.05	$413,444.93	44.8

Figures in italics denote debit.

ST. LOUIS AND SAN FRANCISCO RAILROAD LINES.
CONDENSED GENERAL BALANCE SHEET, JUNE 30, 1911, AND COMPARISON WITH PREVIOUS YEAR.

ASSETS.	1911.	1910.	Increase or Decrease.
Capital Assets:			
Franchises and property....	$217,093,620.47	$214,003,890.94	$3,089,739.53
Stocks and bonds owned....	203,845.69	203,845.69	.....
Total franchises and property	$217,297,466.16	$214,207,736.63	$3,089,729.53
Leasehold estate (The Kansas City, Fort Scott and Memphis Railway)	58,964,291.92	58,642,263.69	322,028.23
Leasehold estate (Kansas City, Memphis and Birmingham Railroad)	9,536,637.80	9,257,609.78	279,028.02
Franchises and property, auxiliary companies	4,946,982.25	4,950,455,90	—3,473,65
Chicago and Eastern Illinois Railroad Company preferred stock (cost of)	9,321,550.00	9,321,550.00	.....
Chicago and Eastern Illinois Railroad Company common stock (cost of)	18,239,187.13	18,239,187.13	.....
Total	$318,306,115.26	$314,618,803.13	$3,687,312.13
Current Assets:			
Cash in treasury	1,413,934.17	1,568,910.29	—154,976.12
Cash in hands of fiscal agents	3,620,880.98	4,198,950.17	—578,069.19
Cash with trustees for redemption of called bonds and notes (see contra)	5,024,816.64	6,348,000.00	—1,323,183.36
Due from agents and conductors	719,267.90	634,268.59	84,999.31
Due from railroad companies, account traffic	*10,512.64*	25,710.04	—36,222.68
Due from companies and individuals	2,894,786.46	2,375,852.23	518,934.23
Bills receivable	2,288,061.72	672,204.71	1,615,857.01
Due from United States P. O. Department	103,367.77	84,335.34	19,032.43
Securities in treasury	4,893,329.23	9,269,958.32	—4,376,629.09
Supplies on hand	3,414,126.57	3,873,795.63	—459,669.06
Advances account construction	867,060.01	934,786.65	—67,726.64
Total	$25,229,118.81	$29,986,771.97	—$4,757,653.16
Deferred Accounts:			
Open carrying accounts in process of adjustment	1,036,012.20	747,074.05	288,938.15
Discount on bonds, carried in suspense, to be charged out in annual installments	11,590,239.26	9,788,690.67	1,801,548.59
Trustees sinking fund accounts	506,049.65	468,776.58	37,273.07
Sinking funds	1,030.66	32,483.30	—31,452.64
Total	$13,133,331.77	$11,037,024.60	$2,096,307.17
Total Assets	$356,668,565.84	$355,642,599.70	$1,025,966.14

LIABILITIES.	1911.	1910.	Increase or Decrease.
Capital Liabilities:			
Capital Stock:			
First preferred	$5,000,000.00	$5,000.000.00	.....
Second preferred	16,000,000.00	16,000,000.00	.....
Common	29,000,000.00	29,000,000.00	.....
Total	$50,000,000.00	$50,000,000.00	.....
Funded debt	171,453,554.68(a)	165,128,204.11(a)	$6,325,350.57
Equipment bonds and notes	13,278,491.59	14,152,521.79	—874,030.20
Outstanding securities on leasehold estate (The K. C. F. S. & M. Ry.):			
Stock—Preferred certificates...	13,510,000.00(b)	13,510,000.00	.....
Funded debt	44,301,000.00	43,668,300.00(c)	632,700.00
Equipment bonds and notes	1,220,000.00	1,548,000.00	—328,000.00
Total	$59,031,000.00	$58,726,300.00	$304,700.00
Outstanding securities on leasehold estate (K. C. M. & B. R. R.):			
Funded debt	9,246,670.00	9,246,670.00	.....
Funded debt, auxiliary companies	3,923,000.00	3,923,000.00	.....
Preferred stock trust certificates (C. & E. I. R. R.).	9,317,550.00	9,317,550.00	.....
Common stock trust certificates (C. & E. I. R. R.).	18,044,500.00	18,044,500.00	.....
Total	$334,294,766.27	$328,538.745.90	$5,756,020.37
Current Liabilities:			
Audited vouchers and payrolls	4,517,034.69	4,586,767.04	—69,732.35
Interest and dividends matured	4,110,575.53	3,106,763.90	1,003,811.63
Interest accrued (not due).	1,610,494.70	1,602,679.72	7,814.98
Taxes accrued (not due)....	570,549.07	521,568.98	48,980.09
Land and real estate notes..	1,075,000.00	1,175,000.00	—100,000.00
Bills payable	.....	4,833,070.00	—4,833,070.00
Bonds and notes called for redemption (see contra)..	5,024,816.64	6,348,000.00	—1,323,183.36
Total	$16,908,470.63	$22,173,849.64	—$5,265,379.01
Provisional Accounts:			
Sinking funds accrued.....	243,024.67	248,977.31	—5,952.64
Equipment replacement fund	382,335.02	278,945.35	103,389.67
Improvement fund (K. C. & M. Ry. & Br. Co.).....	6,759.37	7,475.27	—715.90
Total	$632,119.06	$535,397.93	$96,721.13
Grand total Liabilities..	$351,835,355.96	$351,247,993.47	$587,362.49
Profit and loss	4,833,209.88	4,394,606.23	438,603.65
Total	$356,668,565.84	$355,642,599.70	$1,025,966.14

NOTE.—In stating the assets and liabilities of the companies covered by this balance sheet, the holdings of the St. Louis and San Francisco R. R. Co., in the bonds and capital stocks of leased and auxiliary lines are eliminated.

Figures in italics denote credit.

(a) Excludes, in order to avoid duplication:
$10,000,000 N. O. T. & M. Division bonds pledged as collateral to other liabilities included in "funded debt."

(b) Excludes $1,490,000 of The K. C. F. S. & M. Ry. Preferred Stock Trust Certificates pledged as collateral to other liabilities included in "funded debt."

(c) Excludes $492,000 Memphis, Kansas and Colorado Railway Co. First Mortgage 7 per cent. bonds maturing September 1, 1910, funds for redemption of which were held by Trustee. (Since paid.)

TWENTY-SECOND ANNUAL REPORT OF THE CHICAGO & EASTERN ILLINOIS RAILROAD COMPANY.

Fiscal Year ended June 30, 1911.

To the Stockholders:—

The Board of Directors herewith submit their report of the operations and affairs of the Chicago and Eastern Illinois Railroad Company for the fiscal year ended June 30, 1911.

The results of the operations for the fiscal year were as follows:

Total operating revenue (increase $530,988.68 or 4.5 per cent.	$12,281,344.27	
Operating expenses (increase $390,479.59 or 4.9 per cent.	8,344,463.43	
Net operating revenue (increase $140,509.09 or 3.7 per cent.		$3,936,880.84
Taxes		338,128.91
Operating income		$3,598,751.93
Miscellaneous income		718,583.32
Total income		$4,317,335.25
Interest and rentals		3,072,995.13
Net income after providing for all charges		$1,244,340.12
Dividends paid (6 per cent. on preferred and 9½ per cent. on common stock)		1,215,533.00
Surplus for the year		$28,807.12

For comparative income account in detail, see table on page 10.

The earnings, both gross and net, were the largest in the history of the Company.

There was no change in the capital stock of the Company during the year; the mortgage, bonded and secured debt was increased $729,942.24, as shown on page 15, and the working liabilities decreased $264,994.57.

Upward of 26 per cent. of the total increase in Operating Revenue was saved for the net, and the surplus available for dividends increased $68,549.96, or 5.8 per cent., being somewhat curtailed by a decrease in income from Hire of Equipment of $55,786.21 and an increase in Interest and Rentals of $71,915.53. Of the increase of $441,430.62 in Cost of Transportation, increases in rates of pay amounted to $203,000.00 and the increased cost per ton of engine fuel brought a further burden of $74,900.00.

The growth of your passenger traffic is gratifying, having more than doubled in ten years, and passenger train earnings for the fiscal year increased 11.76 cents per train mile, compared with the previous year.

Bituminous coal tonnage increased during the year 264,873, standing at 7,165,742 tons, or 57.59 per cent. of the total tons carried.

During the year, the Industrial Department located fifty new industries, the estimated cost of which was $1,558,300.00, employing 1,966 men with a yearly output of 10,496 cars.

New equipment was received and placed in service, all purchased for cash, reimbursed by 4 per cent. refunding and improvement bonds, under the mortgage of July 1, 1905, as follows:

5 Pacific type passenger locomotives Nos. 331 to 335, inclusive, and 5 switch locomotives, Nos. 61 to 65, inclusive	$175,879.60
2 Observation smoking cars Nos. 496 and 497	40,205.59
200 40 ton capacity steel underframe automobile cars Nos. 1801 to 2000, inclusive	217,707.46
Total	$433,792.65

With thanks to officers and employes for faithful service.

By order of the Board,

B. L. WINCHELL,
President.

OCTOBER 1, 1911.

CONDENSED GENERAL BALANCE SHEET, JUNE 30, 1911, AND COMPARISON WITH PREVIOUS YEAR.

ASSETS.	1911.	1910.	Increase or Decrease.
Property Investment:			
I. Road and equipment:			
Investment to June 30, 1907:			
Road	$34,654,422.67	$34,654,422.67	.....
Equipment	20,173,710.41	20,173,710.41	.....
	$54,828,133.08	$54,828,133.08	.....
Investment since June 30, 1907:			
Road	$1,040,365.75	$815,972.73	$224,393.02
Equipment	2,695,997.26	2,319,937.39	376,059.87
	$3,736,363.01	$3,135,910.12	$600,452.89
	$58,564,496.09	$57,964,043.20	$600,452.89
Reserve for accrued depreciation—Cr.	*194,691.80*	*144,953.57*	*49,738.23*
Total road and equipment	$58,369,804.29	$57,819,089.63	$550,714.66
II. Securities:			
Securities issued or assumed—Pledged:			
Funded debt	.....	$729,000.00	—$729,000.00
Securities of proprietary, affiliated and controlled companies—Unpledged:			
Stocks	$373,231.76	373,231.76	.....
Total securities (page 20)	$373,231.76	$1,102,231.76	—$729,000.00
III. Other investments:			
Miscellaneous investments:			
Physical property	$215,743.35	$208,551.28	$7,192.07
Securities—Unpledged	1.00	1.00	.....
Total other investments (page 20)	$215,744.35	$208,552.28	$7,192.07
Total property investments	$58,958,780.40	$59,129,873.67	—$171,093.27
Working Assets:			
Cash	$1,183,763.10	$1,006,946.93	$176,816.17
Securities issued or assumed—Held in Treasury:			
Funded debt (page 20)	2,000.00	423,000.00	—$421,000.00
Marketable securities:			
Stocks (page 20)	3,700.00	4,171.42	—471.42
Funded debt (page 20)	88,000.00	153,000.00	—65,000.00
Miscellaneous (page 20)	100,635.12	100,635.12	.....
Loans and bills receivable	545,075.83	437,077.38	107,998.45
Traffic and car service balance due from other companies	258,953.07	317,531.27	—58,578.20
Net balance due from agents and conductors	326,008.89	327,578.63	—1,569.74
Miscellaneous accounts receivable	653,216.74	607,865.29	45,351.45
Material and supplies	1,171,935.30	1,038,243.04	133,692.26
Other working assets	1,674.49	2,384.45	—709.96
Total working assets	$4,334,962.54	$4,418,433.53	—$83,470.99
Deferred Debit Items:			
Advances:			
Temporary advances to proprietary, affiliated and controlled companies	$40,099.30	$40,099.30	.....
Working funds	1,327.17	1,055.58	$271,59
Rents and insurance paid in advance	38,700.54	43,655.95	—4,955.41
Unextinguished discount on securities:			
Unextinguished discount on funded debt	1,772,894.35	1,164,186.22	608,708.13
Special deposits (page 20)	10,578,091.64	10,578,091.64	.....
Cash and securities in sinking and redemption funds	13,366.33	16,219.06	—2,852.73
Other deferred debit items	653.160.50	386,202.31	266,958.19
Total deferred debit items	$13,097,639.83	$12,229,510.06	$868,129.77
Total	$76,391,382.77	$75,777,817.26	$613,565.51

Figures in *italics* denote credits.

LIABILITIES.	1911.	1910.	Increase or Decrease.
Stock:			
Capital stock:			
*Common stock	$13,626,100.00	$13,626,100.00	.....
*Preferred stock	8,992,000.00	8,992,000.00	.....
Stock liability for conversion of outstanding securities of constituent companies	168.88	168.88	.....
Total stock	$22,618,268.88	$22,618,268.88	.....
Mortgage, Bonded and Secured Debt:			
Funded debt:			
In treasury:			
Mortgage bonds	$2,000.00	$1,152,000.00	—$1,150,000.00
Outstanding (not held in treasury):			
Mortgage bonds	43,549,000.00	40,408,000.00	3,141,000.00
Collateral trust bonds	27,000.00	27,000.00	.....
Equipment trust obligations	5,699,232.16	6,960,289.92	—1,261,057.76
Total mortgage, bonded and secured debt (page 16)	$49,277,232.16	$48,547,289.92	$729,942.24
Working Liabilities:			
Loans and bills payable	$528,249.00	†$515,250.00	$12,999.00
Traffic and car service balance due to other companies	244,635.27	250,421.31	—5,786.04
Audited vouchers and wages unpaid	1,159,469.94	1,241,027.12	—81,557.18
Miscellaneous accounts payable	124,416.71	313,741.91	—189,325.20
Matured interest, dividends and rents unpaid	56,896.00	55,995.00	901.00
Matured mortgage, bonded and secured debt unpaid	336.04	3,336.04	—3,000.00
Other working liabilities	49,427.55	†48,653.70	773.85
Total working liabilities	$2,163,430.51	$2,428,425.08	—$264,994.57
Accrued Liabilities Not Due:			
Unmatured interest, dividends and rents payable	$757,582.09	$713,192.92	$44,389.17
Taxes accrued	229,865.56	221,345.53	8,520.03
Total accrued liabilities not due	$987,447.65	$934,538.45	$52,909.20
Deferred Credit Items:			
Operating reserves	$200,262.12	$179,325.31	$20,936.81
Other deferred credit items	330,870,29	259,946.77	71,823.52
Total deferred credit items	$531,132.41	$438,372.08	$92,760.33
Profit and Loss:			
Balance	$813,871.16	$810,922.85	$2,948.31
Total	$76,391,382.77	$75,777,817.26	$613,565.51

*The Trust Company of America holds in Trust Assets $161,300.00 preferred and $6,408,300.00 common stock included in above figures (page 20).

†Changed to accord with Interstate Commerce Commission Classification.

THIRD ANNUAL REPORT FERROCARRILES NACIONALES DE MEXICO.

(NATIONAL RAILWAYS OF MEXICO.)

Mexico Office:
Segunda Calle de Bolivar, No. 19.

New York Office:
No. 25 Broad Street.

To the Shareholders:

In compliance with the provisions of Article 48 of the By-Laws of the Company, I have the honor to present to the shareholders, in the name of the Board of Directors, the report of operations for the fiscal year July 1, 1910, to June 30, 1911.

EXCHANGE AND PAYMENT OF SECURITIES OF THE MEXICAN CENTRAL RAILWAY COMPANY LIMITED, AND OF THE NATIONAL RAILROAD COMPANY OF MEXICO.

In accordance with the terms of the Bankers' Agreement of February 29, 1908, and following the plan adopted, the deposit of securities of the old Mexican Central Railway Company Limited, and National Railroad Company of Mexico, which under said agreement were called for conversion, has continued, and there is at present a very small number of said securities which have not been exchanged for stock and bonds of the National Railways of Mexico, as shown in the following

Statement of the Securities Deposited Up to the 30th of June, 1911, in Accordance with Plan of 6th of April, 1908.

Securities of the Mexican Central Railway Company Limited.

	Total Issue.	Deposited.	Per Cent.	Out-standing.	Per Cent.
Five Per Cent. Notes	$500.00	.....	0.00	$500.00	100.00
Five Per Cent. Priority Bonds.	6,597,000.00	$5,198,000.00	78.79	1,399,000.00	21.21
First Mortgage Bonds	264,062.50	225,715.00	85.48	38,347.50	14.52
Consolidated Mortgage Bonds	109,020,000.00	105,361,000.00	96.64	3,659,000.00	3.36
First Income Bonds	32,706,000.00	32,424,300.00	99.13	281,700.00	.87
Registered Income Bonds	325,200.00	314,000.00	96.55	11,200.00	3.45
Second Income Bonds	11,284,000.00	11,260,000.00	99.79	24,000.00	.21
Shares	59,127,100.00	59,058,800.00	99.89	68,300.00	.11
Total	$219,323,862.50	$213,841,815.00	97.50	$5,482,047.50	2.50

Securities of the National Railroad Company of Mexico.

	Total Issue.	Deposited.	Per Cent.	Out-standing.	Per Cent.
Preferred Stock	$32,000,000.00	$31,998,100.00	99.99	$1,900.00	.01
Second Preferred Stock	22,043,600.00	22,002,600.00	99.81	41,000.00	.19
Common Stock	284,600.00	154,300.00	54.22	130,300.00	45.78
Deferred Stock	11,021,800.00	11,021,800.00	100.00	.....	.00
Total	$65,350,000.00	$65,176,800.00	99.73	$173,200.00	.27

Total Number of Securities of Both Companies.

	Issued.	Deposited.	Per Cent.	Out-standing.	Per Cent.
Bonds and Shares.	$284,673,862.50	$279,018,615.00	98.01	$5,655,247.50	1.99

Note.—All of the above amounts are in U. S. Currency.

In view of the fact that the First Mortgage Bonds, the Registered Income Bonds and the Consolidated Mortgage Bonds of the Mexican Central Railway Company Limited which were outstanding and had not been deposited according to the Plan, became due July 1, 1911, and which that Company had to redeem, the Board of Directors resolved that as the National Railways of Mexico had assumed the obligation by virtue of the contract of transfer of the railways and other properties of the Mexican Central Railway Company Limited, that payment of the securities be made when they became due, and in this way they were nearly all redeemed, there being at present outstanding only a few which have not been presented for redemption. Taking the foregoing into consideration it will readily be seen that the total amount shown in the above statement of securities outstanding should be considerably decreased, inasmuch as the statement in question is made up as of June 30, 1911, the close of the fiscal year under review.

Furthermore, in consideration of the small number of First and Second Income Bonds and of Registered Income Bonds of the Mexican Central Railway Company Limited which were outstanding, and in order to withdraw from the market the securities of that Company before they became due, the Board of Directors considered the acquisition of said bonds advisable, under favorable conditions, and authorized the purchase to be made when possible to do so on desirable terms.

It is satisfactory to record that by reason of the deposits of securities and the purchase of same as outlined above, the amount of obligations called for conversion under the Plan of April 6, 1908, which at present had not been converted, is only $2,029,747.50 which if compared with $284,673,862.50, the total of the securities exchangeable under said Plan, and considering the conditions usually attending operations of this nature, the immense success of the Plan of Readjustment and Union of the Mexican Central Railway Company Limited and National Railroad Company of Mexico will be appreciated.

ACQUISITION OF STOCK OF THE VERA CRUZ TO ISTHMUS RAILROAD AND PAN-AMERICAN RAILROAD COMPANY.

Considering it advisable for the Company to acquire control of the Vera Cruz to Isthmus Railroad, and which was held by the Mexican Government as owner of the majority of the stock of said Company, the Board of Directors, as reported to the regular annual meeting of shareholders held October 5, 1910, entered into negotiations for the purchase of said stock in order to acquire the property in question, and as a result a contract was made with the Mexican Government by virtue of which this Company acquired all the stock of the Vera Cruz & Pacific Railroad Company and the Vera Cruz to Isthmus Railroad, which was owned by the Government, for the cash payment of $100,900 and the obligation on the part of the National Railways of Mexico to pay the interest on the bonds of the Vera Cruz & Pacific Railroad Company, with the condition that in the event that the earnings of the lines of the Vera Cruz to Isthmus Railroad should not cover said interest, the Federal Government would contribute for that purpose, up to the fiscal year of 1912-1913, the amounts of $450,000, $350,000 and $150,000 as maximum during the fiscal years of 1910-1911, 1911-1912, and 1912-1913, respectively, and it being provided that after June 30, 1913, the Mexican Government would participate in the net earnings which might result from the operation of the lines covered by said contract.

This Company has the direct management of the Vera Cruz to Isthmus Railroad by reason of the ownership of said stock, which lines are of great importance for the southern part of the Republic. The Vera Cruz to Isthmus Railroad is still a legally independent corporation, but as before said, it is controlled by the National Railways of Mexico through the possession of the stock purchased by the latter from the Federal Government.

In view of the importance of the lines of the Pan-American Railroad Company, which is the connecting link between the Tehuantepec National Railway and the Mexican frontier with Guatemala, and which will undoubtedly constitute the future route to Central America, the Board of Directors considered it desirable to acquire the control of the Pan-American Railroad Company, not only for the interests of the Company proper, but also in the interests of the service and development of the country adjacent to the railway in question. As a consequence the Board of Directors negotiated for the purchase of a majority of the stock of the Pan-American Railroad Company, as reported to the shareholders at the last regular annual meeting, and entered into a contract to that end with Mr. David E. Thompson, owner of said stock, whereby this Company acquired 96,000 shares and 570 General Mortgage Bonds of that Company, through the obligation assumed by the National Railways of Mexico to guarantee unconditionally the prompt payment of principal and interest of the First Mortgage Bonds and General Mortgage Bonds of Pan-American Railroad Company.

With the control of the lines of the Vera Cruz to Isthmus Railroad and Pan-American Railroad Company, the National Railways of Mexico has a transportation line extending from the frontier with the United States in the North to the southern boundary with Guatemala, with the excepion of some few kilometers covered by the Tehuantepec National Railway.

The shareholders will fully appreciate the advisability of acquiring control of the Vera Cruz to Isthmus and Pan-American lines, as also the advantage to be gained by including the railroads in question in the system of the Company.

On account of the poor physical condition of both the Vera Cruz to Isthmus and Pan-American Railroads, and as neither of these Companies was financially able to meet its fixed charges nor to pay expenses of improvements which it was desired to make on these properties, your Board of Directors approved various loans of money to said Companies, as is shown in the General Balance Sheet accompanying this report; said loans are to some extent offset by deficit in operation and by the amount receivable to cover interest payments under the terms of the contract above mentioned.

SUBSIDIARY COMPANIES.

The Company has continued to operate the various lines and properties pertaining to the different corporations shown in the statement accompanying the General Balance Sheet, of which the National Railways of Mexico owns the majority of the stock, and the contracts entered into with other transportation companies have been complied with. Special attention is drawn to the Compañia Mexicana de Express, S. A., in the organization of which the National Railways of Mexico took part on the lines reported at the regular annual meeting of shareholders of October 5, 1910, and it is gratifying to the Board of Directors to report to the shareholders that the results obtained from the various contracts entered into with said Company have been very satisfactory, the earnings derived by your Company from that source during the year being $2,066,544.67 for express service, and $50,000 as dividend on the Express Company's shares owned by the National Railways of Mexico.

With respect to the Brownsville and Matamoros Bridge Company, another subsidiary company which was organized by the National Railways of Mexico and The St. Louis, Brownsville and Mexico Railway Company, for the construction and operation of an international bridge between Brownsville and Matamoros, the concessions granted, one to the Brownsville and Gulf Railway Company by the United States Government to construct the bridge in question in so far as the northern half of the Rio Bravo is concerned, and the other granted by the Mexican Government to the National Railways of Mexico for the construction over the southern portion of said river, were transferred to the Brownsville and Matamoros Bridge Company in compliance with the respective contracts which are already known to the shareholders.

In compliance with the obligations assumed by the National Railways of Mexico at the time of organizing the Brownsville and Matamoros Bridge Company, to the effect that your Company as well as The St. Louis, Brownsville and Mexico Railway Company would guarantee the mortgage bonds to be issued by the Bridge Company, under the Trust Agreement with the St. Louis Trust Company, by virtue of which bonds were to be issued to the amount of $600,000 and which were duly issued, the National Railways of Mexico and The St. Louis, Brownsville and Mexico Railway Company gave their joint guaranty to said bonds, and, as you will note on the attached Balance Sheet same has been included in the contingent liabilities; this by reason of the fact that while the guaranty is of a joint nature the National Railways of Mexico might be held responsible for the entire amount. However, considering the importance and responsibility of The St. Louis, Brownsville and Mexico Railway Company, it can safely be assumed that the guaranty of the National Railways of Mexico covers only one-half of the amount mentioned.

Concluding the remarks relating to Subsidiary Companies the Board desires to report to the shareholders that the total issue of Five Per Cent. Gold Notes of the Mexican Central Railway Company Limited, have been redeemed, and that the securities deposited thereagainst as collateral have been returned to the Company.

ISSUE OF BONDS AND NOTES.

Pursuant to the authority given by the shareholders at their regular annual meeting held October 5, 1910, to the Board of Directors, the latter has authorized the issue of the following bonds to June 30, 1911: $1,072,133.39, General Mortgage Four Per Cent. Bonds, in reimbursement for the cost of additional rolling stock and equipment acquired between July 1 and December 31, 1910; $3,863,340.60, General Mortgage Four Per Cent. Bonds, to reimburse the Company for expenditures made account additions, betterments and improvements to its property between January 1, 1910, and March 31, 1911, as well as for the cost of additional rolling stock and equipment acquired from January 1 to March 31, 1911; also $4,384,925 of

this class of bonds and $6,949,000 Prior Lien Four and One-half Per Cent. Bonds, in order that they might be sold or used as collateral, as the best interests of the Company might require.

Consideration was given the sale of certain of the bonds of the Company by your Board of Directors, it being thought advisable to dispose of approximately $10,000,000 of the bonds in the treasury, but due to the unfavorable financial conditions the Board decided to postpone the same; accordingly and in order to meet obligations and payments falling due in June and July, 1911, consisting mostly of obligations of the Mexican Central Railway Company Limited, assumed by your Company, the Board of Directors authorized the issue of Two-Year Four and One-Half Per Cent. Notes to the amount of $10,000,000, Gold, depositing as collateral thereagainst $6,000,000 in Prior Lien Bonds and $7,000,000 in General Mortgage Bonds. The corresponding Trust Agreement was duly executed, the collateral deposited and the amount of the notes received by the Company. With the same object in view and owing to similar reasons the Board of Directors negotiated the issue of notes to the amount of £1,000,000 sterling, with Messrs. Lazard Bros. & Company, of London, at a discount of 4½ per cent., pledging Prior Lien Bonds to the face amount of $6,150,000 as collateral thereagainst.

The Board expects to be able to pay off both of the above mentioned series of notes at or before maturity and as soon as it can dispose of certain of the bonds of the Company now in the treasury on favorable terms.

Mention is made of the return to the Company of the $1,800,000 Prior Lien Bonds and the $1,200,000 Guaranteed General Mortgage Bonds deposited for the purpose of guaranteeing the dividend of two per cent. per annum for the three years beginning January 1, 1908, on the Company's First Preferred Shares.

CONSTRUCTION AND OPERATION OF LINES.

Every effort has been made to improve the condition in general of the tracks and appurtenances, as well as of all equipment and rolling stock and to improve the service in all respects. The shareholders will be able to get a good idea of what has been done in this direction by referring to the technical report of the Company's Executive President, whose work deserves all praise. I desire to make special mention of the construction of two lines, the importance of which is self-evident, and which were authorized by the Board of Directors and work started on them by the Construction Department. These two lines are: the line that is to connect the City of Durango with Station of Cañitas on the main line of the old Mexican Central Railway, and the proposed line from the Station of Pénjamo on the Guadalajara Division to Ajuno on the Uruápan Branch.

BOARD OF DIRECTORS.

There is nothing special to be reported to the shareholders with respect to the work of the Board of Directors, such matters as pertain exclusively to the Directors resident in Mexico as also those connected with the New York Local Board, having proceeded with all regularity and the provisions of the Company's By-Laws having been properly observed in all acts and resolutions as well as in the relations between the two Boards, as is evident from the minutes of the meetings held in both places.

It is with much regret that the Board has to inform the shareholders of the loss sustained by the death of Mr. Emilio Pardo, which occurred the 9th of January, 1911. By designation of the Board Mr. Enrique C. Creel was elected to fill the vacancy.

During the year Directors Martín G. Ríbon, José A. Signoret, Pablo Macedo and Guillermo de Landa y Escandón requested leave of absence, which was granted in accordance with the Articles of Association and By-Laws of the Company, and Messrs. Ignacio L. de la Barra, Jorge Vera Estañól, Leandro Fernandez, and Jaime Gurza, respectively, were appointed to act in their stead during their absence.

On August 2, 1911, Mr. Joaquín D. Casasús resigned and Mr. J. N. Galbraith was appointed in his place. Although this did not occur during the period covered by the present report, the Board of Directors wishes to give the shareholders this information in order that they may be fully advised as to changes made.

At the meeting held by the Board of Directors on October 28, 1910, Messrs. José Yves Limantour and Pablo Macedo were appointed Chairman and Vice-Chairman, respectively, of the Board of Directors, and at the same meeting Mr. Limantour was granted leave of absence, and Mr. Macedo in his capacity of Vice-Chairman discharged the duties of the former until May 1, 1911, when he asked to be relieved from the duties of Vice-Chairman owing to his appointment to the position of Financial Agent of Mexico in London, which required his departure from Mexico City; the undersigned was appointed to substitute him during his absence.

The terms of office of all the Directors designated by the shareholders at the regular annual meeting of 1910, to serve during one year, expire today, as well as of the Directors composing the second group mentioned in Clause XIV. of the Articles of Association of the Company, and of the persons substituting either of these. The terms of office of the Commissaries and substitutes appointed by the shareholders at the regular annual meeting of 1910 also expire today.

RESULTS OF OPERATION AND DIVIDENDS.

As will be seen from the Balance Sheet to be presented shortly, the result of the operations of the Company for the fiscal year which terminated on the 30th of June, 1911, is very satisfactory, especially if due consideration is given to the abnormal conditions through which the country has passed during the second half of the year, and which have not seriously affected the net results for the year. This will surely serve as a solid basis on which to establish the credit of your Company and add confidence in the minds of the security holders.

As the shareholders will note by the Balance Sheet and Income Account attached to this report, which after examination made by Messrs. Price, Waterhouse & Company, Chartered Accountants, were duly approved by the Commissaries, as per report from the latter, and now submitted to the meeting, it is shown that during the fiscal year under review there was paid a dividend of four per cent. in two instalments on the Company's First Preferred Shares, which is the maximum dividend allotted to said shares, and which was authorized by the Board of Directors under and in accordance with the respective provisions of the Company's Articles of Association and By-Laws, which authorize the Board to declare dividends in advance for account of earnings. The Board hopes that the shareholders will approve the payment of said four per cent. made to the holders of First Preferred Shares.

From the foregoing facts and data the shareholders can form a good idea of the work performed by the Board of Directors, whose members trust that their actions will meet with the approval of the shareholders, for whose further information the book containing the minutes of meetings of the Board of Directors and Executive Committee, as well as documents pertaining thereto are at their disposal.

Mexico, October 4, 1911.

LUIS ELGUERO,
Vice-Chairman.

FERROCARRILES NACIONALES DE MEXICO.

(NATIONAL RAILWAYS OF MEXICO.)

MEXICO, D. F., September 18, 1911.

Sr. Lic. D. Luis, Elguero,
Vice-Chairman of the Board,
Mexico.

MY DEAR SIR:

I beg to submit herewith to your Board of Directors the following report of the operations of the property for the fiscal year ended June 30, 1911.

In the statistical statements which follow, the figures of The Mexican International Railroad Company have been included with those of the Ferrocarriles Nacionales de México proper, both in statements of operations for the year under review and where comparison is made with the previous year:

RESULTS OF OPERATION.

The following condensed statement of the Income Account shows the results for the year:

		Mexican Currency.
The Gross Earnings from all sources were		$61,934,421.05
The total Expenses of Operation were		39,279,344.57
Leaving Net Receipts of		$22,655,076.48
To which add:		
Interest and Dividends on Securities owned		753,562.60
Other receipts		191,329.90
Making		$23,599,968.98
From which deduct:		
Taxes and Rentals	$483,590.82	
Operating Deficit of Subsidiary Companies (Texas-Mexican Ry. Co. and Pan-American Railroad Company)	464,421.13	
Sundry Adjustments of Operating Expenses:		
Material Adjustment Account	200,000.00	
Additions and Betterments Adjustment Account	300,000.00	
Reserves on Additions and Betterments in Suspense	100,000.00	
Provision for Expenses for Repair and Replacement of Equipment	1,300,000.00	
Reserve for Bad and Doubtful Debts	100,000.00	
Various Items in Suspense eliminated	147,816,84	
	$2,147,816.84	3,095,828.79
		$20,504,140.19
And:		
Interest on Funded Debt and Equipment and Collateral Trusts, etc.	$17,250,131.77	
Interest on Notes Payable	696,137.55	
		17,946,269.32
Leaving Balance carried to Profit and Loss Account		$2,557,870.87
And deducting:		
Five Per Cent. of Net Profits transferred to Reserve Fund	$127,893.54	
Dividend on First Preferred Shares, four per cent.	2,306,632.00	
		2,434,525.54
Leaving as Net Surplus for the year ended June 30, 1911		$123,345.33
To which add:		
Net Surplus at June 30, 1910	$1,015,237.00	
Less:		
Dividend of 1 Per Cent. on First Preferred Shares	576,658.00	
		438,579.00
Which gives a total Net Surplus at June 30, 1911, of		$561,924.33

MILEAGE.

Average Length of Line Operated:

The average length of line operated during the year was 9,868.537 kilometers, or 6,132.061 miles.

GROSS EARNINGS.

The total Gross Earnings from all sources amounted to $61,934,421.05, Mexican Currency, for details of which, as well as comparison with last year, your attention is called to the following table:

1909-1910.			1910-1911.	
EARNINGS.	PERCENTAGE.		EARNINGS.	PERCENTAGE.
$45,262,604.45	73.62	Commercial Freight	$44,320,766.34	71.56
215,277.03	.35	Construction Freight	876,981.93	1.41
12,234,007.92	19.90	Passenger	12,657,110.32	20.44
226,884.91	.37	Baggage	235,111.63	.38
1,954,532.43	3.18	Express	2,066,544.67	3.34
51,470.45	.08	Telegraph	55,705.93	.09
130,092.42	.21	Rentals	130,726.74	.21
8,186.34	.01	Floating Equipment	44,517.39	.07
1,400,091.47	2.28	Miscellaneous	1,546,956.10	2.50
$61,483,147.42	100.00		$61,934,421.05	100.00

The percentage of each class of commercial freight to the total handled during the year, and comparison with the previous year, is shown in the following table:

1909-1910.		1910-1911.
PERCENTAGE.		PERCENTAGE.
10.71	Forest Products	12.88
19.33	Agricultural Products	22.33
3.00	Live Stock and Animal Products	3.15
57.19	Mineral Products	50.90
9.77	General Merchandise	10.74
100.00		100.00

The foregoing table shows a slight increase in the Gross Earnings for the year, and by referring to the General Auditor's Statement of Earnings

and Expenses by months, No. 6, submitted herewith, it will be seen that for the first seven months of the year the earnings show very satisfactory increases, but I am sorry to report a considerable falling off for the remaining five months on account of the political disturbances throughout the Republic.

OPERATING EXPENSES.

The maintenance of the property has received careful attention and at the close of the year the physical condition throughout the major portion of the system was much improved, particular attention being called to the large amount of new heavy rail purchased and laid, amount of stone ballast placed in track, and number of permanent steel bridges built and replaced as shown in detail in this report.

During the last six months of the year the expenses were increased by the political disturbances in the Republic. It is expected that the Government will reimburse your Company for such damages as can be properly substantiated by supporting evidence to claims. These are in process of being formally presented.

The cost of operating the property for the fiscal year was 63.42 per cent.

The comparative percentage of the Sub-Accounts for the years 1909-1910 and 1910-1911 are as follows:

1909-1910. Percentage.		1910-1911. Percentage.
26.42	Maintenance of Way and Structures	28.42
21.15	Maintenance of Equipment	22.37
46.57	Conducting Transportation	43.64
5.86	General Expenses	5.57
100.00		100.00

The comparative percentage to Gross Earnings for the years 1909-1910 and 1910-1911 being:

1909-1910. Percentage.		1910-1911. Percentage.
15.79	Maintenance of Way and Structures	18.02
12.63	Maintenance of Equipment	14.19
27.82	Conducting Transportation	27.68
3.50	General Expenses	3.53
59.74		63.42

STATEMENTS OF OPERATION.

The various statements of accounts as prepared by the General Auditor, and which accompany this report, give in detail the results for the year, and show the financial condition of the property.

The books and accounts have been audited by Messrs. Price, Waterhouse & Company, of London, New York and Mexico, and a copy of their certificate as to the correctness thereof accompanies this report.

The results of operation for the year are as follows:

1909-1910. Mexican Silver.		1910-1911. Mexican Silver.	Increase or Decrease.
$61,483,147.42	Gross Earnings	$61,934,421.05	
36,728,318.36	Operating Expenses	39,279,344.57	
$24,754,829.06	Net Earnings	$22,655,076.48	
$12,377,414.53	Which, reduced to *gold* at the average price of the Mexican dollar for the year, viz., 50 cents equals.....*gold*.....	*$11,327,538.24*	
59.74	Operating percentage	63.42	Inc. 3.68
19,903,910	Kilometers run by revenue trains.	19,833,846	Dec. 0.35
$3.0890	Gross Earnings per revenue train kilometer	$3.1227	Inc. 1.09
1.8453	Operating Expenses per revenue train kilometer	1.9804	" 7.32
1.2437	Net Earnings per revenue train kilometer	1.1423	Dec. 8.15
6,192.06	Gross Earnings per kilometer of road operated	6,275.94	Inc. 1.35
3,698.96	Operating Expenses per kilometer of road operated	3,980.26	" 7.60
2,493.10	Net Earnings per kilometer of road operated	2,295.68	Dec. 7.92
5.93194	Average amount received for each ton of freight	6.55209	Inc. 10.47
.01706	Average receipts per ton per kilometer	.01818	" 6.57
1.85472	Average amount received from each passenger	1.80069	Dec. 2.91
.01852	Average receipts per passenger per kilometer	.01810	" 2.27

Expressed in miles the figures show as follows:

1909-1910. Mexican Silver.		1910-1911. Mexican Silver.	Increase or Decrease.
12,367,693	Miles run by revenue trains	12,324,157	Dec. 0.35
$4.9713	Gross Earnings per revenue train mile	$5.0254	Inc. 1.09
2.9697	Operating Expenses per revenue train mile	3.1872	" 7.32
2.0016	Net Earnings per revenue train mile	1.8382	Dec. 8.15
9,965.19	Gross Earnings per mile of road operated	10,100.18	Inc. 1.35
5,952.93	Operating Expenses per mile of road operated	6,405.62	" 7.60
4,012.26	Net Earnings per mile of road operated	3,694.56	Dec. 7.92
5.93194	Average amount received for each ton of freight	6.55209	Inc. 10.47
.02746	Average receipts per ton per mile	.02926	" 6.57
1.85472	Average amount received from each passenger	1.80069	Dec. 2.91
.02980	Average receipts per passenger per mile	.02912	" 2.27

ADDITIONS AND BETTERMENTS.

Reference to the General Balance Sheet will show the total amount of $19,088,454.82, Mexican Currency, to the debit of "Additions and Betterments" Account at June 30, 1911; of this amount the sum of $4,290,918.94, Mexican Currency, pertains to expenditures made up to and including June 30, 1910; the balance, or $14,797,535.88, Mexican Currency, covers amounts expended during the year under review.

From the following statements it will be noted that of the latter amount, $7,148,177.22 were expended on locomotives, passenger coaches, freight cars and work equipment (the major part of these having been authorized and purchased in the previous year but not received and paid for until after July 1, 1910), the balance, or $7,649,358.66, on extraordinary work of a capital nature.

The following statement gives details of amounts expended on this account for the period referred to, viz.:

		Mexican Currency Expended July 1, 1910, to June 30, 1911.
Right of Way and Station Grounds		$51,464.13
Protection of Banks and Drainage		103,031.29
Grade Reductions and Changes of Line		155,550.15
Tunnel Improvements		170,433.73
Bridges, Culverts and Trestles		2,009,133.67
Increased Weight of Rail		1,367,468.16
Ballast		380,006.26
Sidings and Spur Tracks		356,662.84
Terminal Yards		77,259.42
Improvements of Crossings Over and Under Grade		70.03
Interlocking Apparatus		3,525.33
Telegraph and Telephone Lines		38,933.16
Station Buildings and Fixtures		324,067.08
Roadway Buildings		8,466.35
Shops, Enginehouses and Turntables		17,988.14
Shop Machinery and Tools		288,927.09
Water and Fuel Stations		223,113.78
Dock and Wharf Property		3,601.24
Electric Light and Power Plants		3,580.32
Gas Plants		6,014.53
Additional Equipment:		
Locomotives	$871,618.64	
Passenger Coaches	601,521.70	
Freight Cars	5,554,738.51	
Work Equipment	120,298.37	
		7,148,177.22
Other Additions and Betterments		6,258.87
Change of Gauge and Change of Line between Acambaro and Uruápan		1,732,906.54
Tram Line between Tecajete and Hacienda "Los Arcos"		6,500.56
Connection between Anhelo and Paredon		305,475.35
Sundry Betterment Expenditures Pending Formal Authorization		9,872.31
		$14,798,487.55
Less:		
Line from Durango to Llano Grande	$41.00	
Colombia Branch	910.67	
		951.67
Total		$14,797,535.88

Ballast:

The following quantities of ballast have been placed in the track during the year, viz.:

Divisions.	Lineal Meters.
Aguascalientes	13,192
Cardenas	85,538
Chihuahua	71,219
Gomez Palacio	6,385
Guadalajara	36,283
Hidalgo	834
Mexico Terminals	1,470
Mexico-Queretaro	84,998
Monclova	545
Monterrey	191,890
San Luis	55,910
Total	548,264

BRIDGES, TRESTLES AND CULVERTS.

The following permanent bridges were built during the year:

Aguascalientes Division:

Zacatecas District. One 31.97 meter Pony truss changed to steel trestle lattice span.

Cardenas Division:

One 54.86 meter through pin connected span changed to one through rivetted span of same length; bridge 481-A—Main Line.

Two 45.72 meter through pin connected spans and one 22.86 meter opening on frame bents changed to two 45.72 meter through plate girders and one 21.34 meter through girder on new abutment; bridge 526-A—Main Line.

One 16.46 meter plate girder span changed to 17.07 meter deck plate girder span; bridge 550-A—Main Line.

One 45.72 meter through pin connected span changed to one 45.72 meter through rivetted span; bridge 551-A—Main Line.

Bridges 560-A and 561-A—Main Line. Strengthened by building piers under 9.75 meter "J" beam spans.

Bridge 665-A—Main Line. Two 45.72 meter through pin connected spans and one draw span over Tamesi River reconstructed.

Gomez Palacio Division:

Bridge 1213-A. The 24.38 meter pile approach on south end replaced with two 9.14 meter "I" beam spans on masonry.

Guadalajara Division:

Bridges 93-B and 150-A, at La Piedad and La Barca, respectively, changed from 62.41 meter light weight through trusses to heavier weight trusses of same length.

Two five bent pile bridges of 18.3 meters each built on "Y" at Mazatepéc, on the Manzanillo line.

Ameca Branch—Bridge 41-A. One 18 bent pile bridge replaced with two 24.38 meter deck plate girders.

Hidalgo Division:

One 7.01 meter "I" beam bridge replaced with one 16.46 meter through plate girder span on masonry; Bridge 59-D.

Mexico-Queretaro Division:

Bridge 0-152-A. New bridge of one 5.18 meter span "I" beams on masonry.

Bridge 0-87-A. New bridge of one 3.05 meter span "I" beams on masonry.

Bridge 0-87-B. Changed from rail to one 3.05 meter span "I" beams on masonry.

Bridge 0-88-A. New bridge of one 3.05 meter span "I" beams on masonry.

Bridge 0-77-A. Wing walls repaired and lengthened.

Bridge A-84-D. One 21.36 meter pin connected span replaced with a 21.33 meter plate girder.

Monclova Division:

Bridge 126-A. Two wooden trestle spans replaced with two 5.26 meter floor stringers on masonry.

Bridge 127-A. Five wooden trestle spans replaced with two 9.14 meter deck plate girders on masonry.

Bridge 145-A. Eight wooden trestle spans replaced with two 4 meter segmental arch culverts.

Bridge 136-A. Four wooden trestle spans replaced with two 3 meter segmental arches.

Bridge 157-A. Two wooden trestle spans replaced with one floor stringer of 5.26 meters.

Bridge 158-A. Two wooden trestle spans replaced with one 5.18 meter "I" beam span on masonry.

Bridge 163-A. Two wooden trestle spans replaced with one 3.05 meter rail girder span on masonry.

Four wooden trestle spans replaced with two 2-meter segmental arch culverts.

Bridge 171-A. Thirty-three wooden trestle spans, 130 meters long, replaced with three 24.38 meter through plate girder spans on masonry.

Bridge 193-A. Four wooden trestle spans replaced with three 5.18 meter "I" beam spans on masonry.

Bridges 194-A and 194-B. Four wooden trestle spans replaced with two 5.18 meter "I" beam spans.

Bridge 195-A. Four wooden trestle spans replaced with two 9.14 meter deck plate girders on masonry.

Bridges 197-A and 198-A, respectively. Eight wooden trestle spans replaced with two 5.18 meter deck plate girders and two 5.18 meter "I" beam spans on masonry.

Bridge 247-C. Seven wooden trestle spans replaced with two 3 meter circular arches.

Bridge 251-D. Seven wooden trestle spans replaced with three 5.18 meter "I" beam spans on masonry.

Bridge 252-A. Seven wooden trestle spans replaced with a 5 meter semi-circular arch culvert.

Monterrey and Gulf Division:

Bridges 165-C, 171-B, 177 and 179. Victoria District, which were all wooden structures, were replaced with five 7.01 meter "I" spans on masonry.

Bridge 410. Linares District, consisting of one 3 meter arch, changed to a double 3 meter arch structure.

Northern Division:

Bridge 1116-B. Six span frame trestle replaced with 13.41 meter deck plate girder.

Bridge 1014-B. One 19.8 meter deck girder replaced with a 30.48 meter through truss.

Bridge 958-B. Two 38.10 meter through spans to replace two spans of same length, which were too light.

Bridge 993-B. Ten span frame trestle replaced with six 7.01 meter "I" beam spans.

Bridges 956-E and 959-A. One span frame trestle replaced with 5.18 meter "I" span, and one 4 meter arch culvert replaced with one 5.18 meter "I" beam span.

Bridges 954-C, 960-B, 964-E, 966-B, 966-D, 971-A and 972-A. Fourteen 7.01 meter "I" beams put in to replace frame trestle.

Bridges 955-D, 964-D, 967-A, 967-D and 968-A. Five 5.18 meter "I" structures replacing frame trestles.

Bridges 954-D, 956-D and 960-A. One 3 meter arch replacing frame trestle, and one new arch culvert of one meter and one 4 meter arch culvert replacing small masonry box.

Bridge 961-C. One new "I" span of 7.01 meters.

Bridges 928-F, 986-A and 988-D. Three 5.18 meter "I" spans replacing spans of same length which were too light.

Bridges 969-C and 984-C. One 9.75 meter girder and one 7.01 meter "I" beam span replacing those of same length which were too light.

Bridges 954-E, 955-A, 955-C, 956-B, 962-A, 964-A and 993-C. Seven 2 meter arch culverts replacing frame trestles.

Bridges 954-B, 962-B and 966-E. Three 5.18 meter "I" beam spans replacing frame trestles.

Bridge 1117-A. Two 18.28 meter through girders replacing ten span frame trestles.

Bridges 961-A and 994-A. Two 7.01 meter "I" beam span replacing frame trestles.

Bridge 994-B. One 4 meter arch culvert replacing frame trestle.

San Luis Division:

Bridges 353-C, 355-A, 355-D, 355-E, 356-A and B, 359-D, 360-A and C, 367-C, 368-A and C, 370-B, 371-C, 372-B, 375-A, 472-B, 329-B and C, 330-A and B, 332-A, 335-D, 347-D and 348-B. Twenty-five 3.05 meter rail girder bridges to replace wooden stringers.

Bridge 372-F. One 3.96 meter "I" span to replace wooden stringers on masonry.

Bridge 425-B. One double 5.18 meter "I" structure on standard abutment, to replace a light half through 9.75 meter bridge with wooden floor.

Bridges 472-A, 474-D, 324-A and 344-B. Three double 2 meter segmental arches, to replace wooden trestles.

Bridge 487-B. Four 2 meter segmental arches, to replace wooden trestles.

Bridge 479-B. One double 5.18 meter "I" beam bridge on masonry, to replace old structure.

Bridge 480-C. Three 71.63 meter deck plate girders on masonry abutments and piers, replacing old structure.

Bridge 331-A. One 3.96 meter "I" span on masonry, to replace wooden stringers.

Bridge 566-B. Two new 5.18 meter "I" beam spans—one in main line and one in siding—to replace old beams of lighter weight.

Bridge 647-A. Two 5.18 meter "I" beam spans on abutments and piers, to replace wooden trestle.

Bridge 910-F. One 53.34 meter through pin connected span, to replace a riveted span of same length.

Torreon Divisions

Bridges 631-A, 631-C, 632-C and 635-A. Four 5.18 meter "I" spans on masonry, replacing former wooden and rail structures.

Bridges 631-D, 631-E, 632-A and B, 633-A and 634-A. Twelve 1 meter simi-circular arch culverts, replacing rail and timber trestles.

Bridges 633-B and 638-E. Two 3 meter semi-circular arch culverts, replacing former timber trestles.

Bridge 635-B. Five 5.18 meter deck girder spans on masonry, replacing timber trestle structure.

RELAYING WITH HEAVIER RAIL.

The following sections of track were laid with heavier rail during the year, viz.:

Aguascalientes Division:

From kilometer 475.150 to kilometer 486.030, difference 10.880 kilometers, and from kilometer 735.838 to kilometer 745.030, difference 9.192 kilometers, a total of 20.072 kilometers of 32.739 kilogram (66-lb.) rail replaced with 37.204 kilogram (75-lb.) rail.

San Juan del Rio Yard. From kilometer 190.144 to kilometer 190.798, a total of 645. track meters of 27.779 kilogram (56-lb.) rail replaced with 37,204 kilogram (75-lb.) rail.

Cardenas Division:

From kilometer 322.070 to kilometer 382.809, or 60.739 kilometers, and from kilometer 618.759 to kilometer 651.000, or 32.241 kilometers, a total of 92.980 kilometers, of which 79.936 kilometers was 27.779 kilogram (56-lb.) rail and 11.165 kilometers of 32.739 kilogram (66-lb.) rail and 1.879 kilometers of 41.172 kilogram (83-lb.) rail replaced with 42.390 kilogram (85-lb. A. R. A.) rail.

From kilometer 291.963 to kilometer 295.330, or 3.367 kilometers of 32.739 kilogram (66-lb.) rail replaced with 42.164 kilogram (85-lb. A. S. C. E.) rail.

From kilometer 453.624 to kilometer 453.774, or 150 track meters of 41.172 kilogram (83-lb.) rail replaced with 42.164 kilogram (85-lb. A. S. C. E.) rail.

From kilometer 514.920 to kilometer 520.632, or 5.712 kilometers of 32,739 kilogram (66-lb.) rail replaced with 42.164 kilogram (85-lb. A. S. C. E.) rail.

Chihuahua Division:

From kilometer 1734.422 to kilometer 1829.000, or 94.578 kilometers; from kilometer 1320.318 to kilometer 1321.196, or 878 meters; also several turnouts on this Division were changed to the extent of 734 meters, making a total of 96.191 kilometers of 27.779 kilogram (56-lb.) rail replaced with 37.204 kilogram (75-lb.) rail.

Guadalajara Division:

From kilometer 0.860 to kilometer 251.160, or 250.300 kilometers of 27.779 kilogram (56-lb.) rail replaced with 34.723 kilogram (70-lb.) rail.

Manzanillo Line. Between Tuxpan and Zapotiltic 1.378 kilometers of 27.779 kilogram (56-lb.) rail replaced with 37.204 kilogram (75-lb.) rail.

Mexico-Queretaro Division:

From kilometer 0-5.014 to kilometer 0-7.614, or 2.597 kilometers of 32.739 kilogram (66-lb.) rail was laid in place of 37,204 kilogram (75-lb.) rail.

From kilometer 0-237.648 to kilometer 0-237.967, or 319 meters; from kilometer 0-251.209 to kilometer 0-266.960, or 15.751 kilometers, a total of 16.070 kilometers of 27.779 kilogram (56-lb.) rail replaced with 32.739 kilogram (66-lb.) rail.

From kilometer A-52.780 to kilometer A-62.180, or 9.400 kilometers; from kilometer A-71.220 to kilometer A-169.060, or 97.840 kilometers, a total of 107.240 kilometers of 32.739 kilogram (66-lb.) rail replaced with 37.204 kilogram (75-lb.) rail.

At Hercules, Queretaro, Jocóqui, Manuel and Gonzalez switches were changed, and Main Line between switches to the extent of 7.209 kilometers from 37.204 kilogram (75-lb.) rail to 42.164 kilogram (85-lb. A. S. C. E.) rail.

Monclova Division:

From kilometer 113.721 to kilometer 115.943, or 2.222 kilometers of 27.779 kilogram (56-lb.) rail replaced with 30.507 kilogram (61½-lb.) rail.

Monterrey Division:

From kilometer 21.000 to kilometer 26.273, or 5.273 kilometers; from kilometer 96.796 to kilometer 97.509, or 713 meters; from kilometer 233.919 to kilometer 234.769, or 850 meters; from kilometer 371.022 to kilometer 371.760, or 738 meters, a total of 7.574 kilometers of 27.779 kilogram (56-lb.) rail replaced with 34.723 kilogram (70-lb.) rail.

From kilometer 50.100 to kilometer 75.000, or 24.900 kilometers, and from kilometer 593.520 to kilometer 594.500, or 980 meters, a total of 25.880 kilometers of 27.779 kilogram (56-lb.) rail replaced with 37.204 kilogram (75-lb.) rail.

From kilometer 478.890 to kilometer 479.162, or 272 meters of 27.779 kilogram (56-lb.) rail replaced with 32.739 kilogram (66-lb.) rail.

From kilometer 580.631 to kilometer 581.000, or 369 meters, and from kilometer 644.000 to kilometer 644.600, or 600 meters, a total of 969 meters of 27.779 kilogram (56-lb.) rail replaced with 30.507 kilogram (61½-lb.) rail.

Northern Division:

Matamoros Branch. The following rail was taken up and laid. viz.:

Kilometers.		Taken Up.		Laid.		
		19.842 K.	22.322 K.	27.779 K.	32.739 K.	37.204 K.
From.	To.	(40-lb.)	(45-lb.)	(56-lb.)	(66-lb.)	(75-lb.)
86.440	88.500	...	2.060	1.971	...	.089
92.500	107.300	...	14.800	14.711	...	.089
107.900	112.000	...	4.100	4.011	...	.089
112.600	125.000	...	12.400	12.355	...	.045
125.000	128.900	3.900	...	3.900	...	...
129.350	131.700	2.350	...	2.350	...	...
132.020	137.000	4.980	...	4,624	...	.356
137.000	180.000	43.000	...	...	42.599	.401
190.000	190.044	.044	...	...	...	.044
198.830	198.874	.044	...	...	...	.044
199.250	199.295	.045	...	...	...	.045
207.495	207.540	.045	...	...	...	.045
207.960	208.005	.045	...	...	...	.045
216.000	235.650	19.650	...	...	19.383	.267
235.650	275.700	40.050	...	39.694	...	.356
279.600	307.150	27.550	...	27.283	...	.267
328.000	329.754	1 754	...	1.754	...	...
Totals.....		143.457	33.360	112.653	61.982	2.182
Totals.....		176.817		176.817		

Pacific Division:

From kilometer 5.745 to kilometer 36.388, or 30.643 kilometers; from kilometer 49.622 to kilometer 49.888, or 266 meters, and from kilometer 63.510 to kilometer 72.902, or 9.392 kilometers, a total of 40.301 kilometers of 22.322 kilogram (45-lb.) rail replaced with 27.779 kilogram (56-lb.) rail.

San Luis Division:

On the Morales Branch to the San Luis Smelter 11 kilometers of 19.842 kilogram (40-lb.) rail replaced with 27.779 kilogram (56-lb.) rail.

From kilometer 313. to kilometer 364., or 51 kilometers of 34.723 kilogram (70-lb.) rail replaced with 26.742 kilometers of 42.164 kilogram (85-lb. A. S. C. E.) rail, and 24.258 kilometers of 42.390 kilogram (85-lb. A. R. A.) rail.

From kilometer 364. to kilometer 505., or 141 kilometers of 34.723 kilogram (70-lb.) rail replaced with 42.664 kilogram (85.45-lb. A. R. A.) rail.

From kilometer 505. to kilometer 523.750, or 18.750 kilometers; from kilometer 527.585 to kilometer 530.765, or 3.180 kilometers, a total of 21.930 kilometers of 34.723 kilogram (70-lb.) rail replaced with 42.664 kilogram (85.45-lb. A. R. A.) rail.

From kilometer 530.765 to kilometer 562., or 31.235 kilometers of 34.723 kilogram (70-lb.) rail replaced with 42.164 kilogram (85-lb. A. S. C. E.) rail.

Torreon Division:

From kilometer 700. to kilometer 870., or 170 kilometers of 26.787 kilogram (54-lb.) rail replaced with 37.204 kilogram (75-lb.) rail.

NEW SIDE AND PASSING TRACKS.

During the year new side tracks, passing tracks, cross-overs and extensions to existing side-tracks were built to the extent of 46.947 kilometers. The following statements give details of weight of rail used in these new tracks, viz.:

		KILOMETERS.
Forty pound rail (19.842 kilograms)		.494
Forty-five pound rail (22.322 kilograms)		8.519
Fifty-six pound rail (27.779 kilograms)		31.816
Seventy pound rail (34.723 kilograms)		4.959
Seventy-five pound rail (37.204 kilograms)		.622
Eighty-five pound rail (42.390 kilograms)		.537
Total		46.947
From which deduct:—		
Tracks taken up:		
Forty pound rail (19.842 kilograms)	1.467	
Forty-five pound rail (22.322 kilograms)	0.177	
Fifty-six pound rail (27.779 kilograms)	11.206	
Sixty-six pound rail (32.739 kilograms)	0.015	
Seventy pound rail (34.723 kilograms)	0.312	
Seventy-five pound rail (37.204 kilograms)	0.128	
		13.305
Net increase		33.642

IN GENERAL.

Employees:

The number of employees in the service of the Company at the close of the fiscal year was 30,874. Of the total number 1,219, or 3.95 per cent., were foreigners.

Statements of Equipment:

Your attention is invited to the accompanying statement showing various classes of locomotives and cars on hand at June 30, 1911.

New Equipment:

The new equipment referred to in the last annual report has all been received, the greater part of it having been delivered to us during the year under review, and in addition thereto orders were placed, with the approval of the Board of Directors, for 200 tank cars and 200 flat cars, the latter for replacement of cars destroyed, etc., and the former to take care of the increased business principally in the movement of oil.

Express Service:

The results from the operation of this service under the contract with the Compañia Mexicana de Express, S. A., for the year have been satisfactory.

Tree Planting:

Considerable advance has been made in the matter of planting trees along our lines during the year just closed and a large number of young trees were shipped from the Company's nursery at La Barra to various points on the system. In the majority of the cases the young trees are thriving and doing well.

Artesian Wells:

New artesian wells were sunk and existing wells deepened at various points on the system for the purpose of improving the water service.

Fuel Oil:

Arrangements have been made for an additional supply of 2,000 barrels of fuel oil per day, under contract, for the National Railways of Mexico, and it is expected that the necessary engines will be equipped and facilities ready for using this additional quantity by the end of the present calendar year.

Laredo Bridge:

A new six span, single track steel bridge with concrete piers and abutments over the Rio Grande (Rio Bravo del Norte) was erected during the year and trains were first operated over it on April 5, 1911.

Change of Gauge:

The change from narrow to standard gauge of the line from Acambaro to Uruápan, a distance of 230 kilometers, was carried out during the fiscal year and the work completed and standard gauge trains operated over the line on the 20th of July, 1911. The work involved the construction of 63 kilometers of new line at various points between Acambaro and Patzcuaro to reduce grades, avoid unnecessary curvature, and shortened the distance by some 7,260 kilometers.

Tunnel at "La Mariposa":

This tunnel, at Kilometer 959 Northern Division, was enlarged and lined throughout and line changed at both ends of tunnel. Retaining walls and a 4 meter culvert were also constructed at the south end of this tunnel.

Anhelo-Paredon Cut-off:

This cut-off line was put into operation on September 15, 1910, all work having been completed by that time with the exception of the placing of two pairs of 25.15 meter deck girders at Rio Patos and one pair of 22.13 meter deck girders at kilometer 6.250, the masonry, however, being all ready.

Isasi Change of Line—Monterrey and Gulf Division:

Due to the washouts in the year 1909, the line between kilometers 154.963 to 157.615 was revised, line changed to reduce curvature and grade raised above the high water level.

At kilometer 151 work similar to the above was done for the same reason, and the bridge there was raised 2.1 meters and an additional bridge of 45.72 meters, single track through riveted trusses, was constructed.

Linares Bridge and Change of Line:

The original bridge which consisted of two 51.82 meter spans was replaced with a new bridge of five 53.34 meters, through pin connected span, and reinforced concrete abutments and piers. The grade was raised on each side of the bridge to clear the high water level.

Montemorelos Bridge and Change of Line:

This work, which includes new passenger and freight stations, a new bridge composed of five 48.46 meter steel spans, as well as a 4.069 kilometer change of line, was carried out during the year with a view of avoiding further trouble from high water.

San Juan Bridge and Change of Line:

A new bridge, consisting of eight 53.34 meter spans on reinforced concrete abutments and concrete piers, was constructed over the San Juan River, and also 1.600 kilometers of change of line on the south end and 200 meters of grade on the north end raised 1.5 meters.

These changes were made on account of damages done during the floods in August, 1909, and were completed in December, 1910.

New Line from Durango to Llano Grande:

Reference to this line was made in the report for the year ended June 30, 1910. During the fiscal year under review work has been proceeded with and at the close of the year the total percentage of grading and masonry completed to that date was 89.37 per cent. It is estimated that the first twenty kilometers of this line will be completed and ready for operation by the end of September, 1911.

New Line from Durango to Cañitas:

This line from Durango to Cañitas, in the States of Durango and Zacatecas, covers a distance of approximately 267 kilometers and passes in the vicinity of Nombre de Dios, Chalchihuites and Rio Grande to a junction with the Aguascalientes Division at kilometer 813.261 from Mexico. A branch line of about 12 kilometers in length is to be built to Sombrerete. The line is covered by concessions from the State Governments of Durango and Zacatecas as well as from the Federal Government. Contract for the grading and masonry on the first 160 kilometers out of Durango was let on March 30, 1911.

New Line from Pénjamo to Ajuno:

This line in the States of Guanajuato and Michoacan, of approximately 135 kilometers in length from Pénjamo on the Guadalajara Division to Ajuno on the Pacific Division, is being built under a concession from the Federal Government. Contract was let for the work in October, 1910, and work commenced out of Pénjamo during the early part of November, 1910.

Purchase of New Rail:

During the year under review your Company received and paid for some 33,160 tons of domestic 85-lb. rail and 33,560 tons of 75-lb. foreign rail. These quantities of new rail were furnished under contracts dating back some time and which were duly approved and authorized by the Board of Directors.

Statements of Accounts:

Attached hereto you will please find letter from the General Auditor, dated September 8, 1911, together with the ten statements of accounts as listed therein.

Accompanying this report will be found a list of directors and officers of the Company as of June 30, 1911.

It is with deep regret that I record the death of an old time official of the Company in the person of the late Mr. J. M. Frazer, who at the time of his death in October, 1910, was General Treasurer of your Company.

Respectfully submitted,

E. N. BROWN,
President.